ENGINEERING NEWS-RECORD

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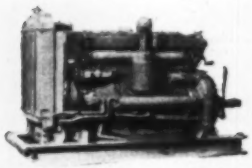

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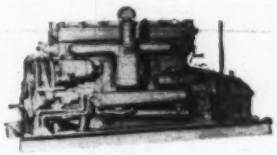

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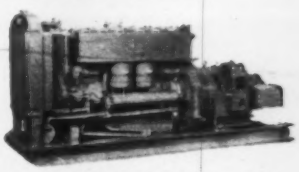

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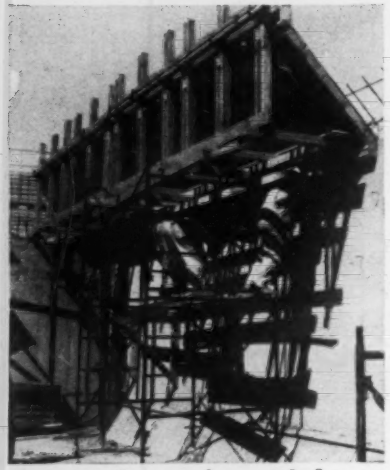
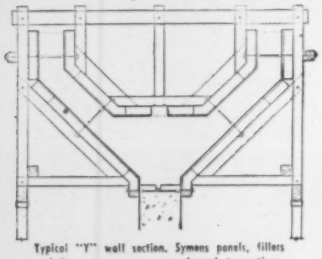


Gang Forming Licks "Y" Wall Problem

Pays Off in Quality Pours, Speed and Reduced Costs

2,665 lineal feet of "Y" walls and half "Y" walls, with 16'-9" high walls on a tank addition to a sewage treatment plant—that was the pouring problem faced by contractors, Wander & Mason of Worthington, Ohio. They solved the problem by pouring the walls in three lifts with the forms ganged for the final "Y" and half "Y" pours.

On the "Y" walls Symons standard panels, fillers, inside and outside bay corners, which were eight feet long, were ganged in 16-foot sections and handled either by crane or rolling scaf-



Typical "Y" wall section. Symons panels, fillers and bay corners were gang formed in sections.

folding. One 16-foot outside section was stripped, moved to the next wall section and reset by three men in 20 minutes.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Information on Symons products is available upon request.

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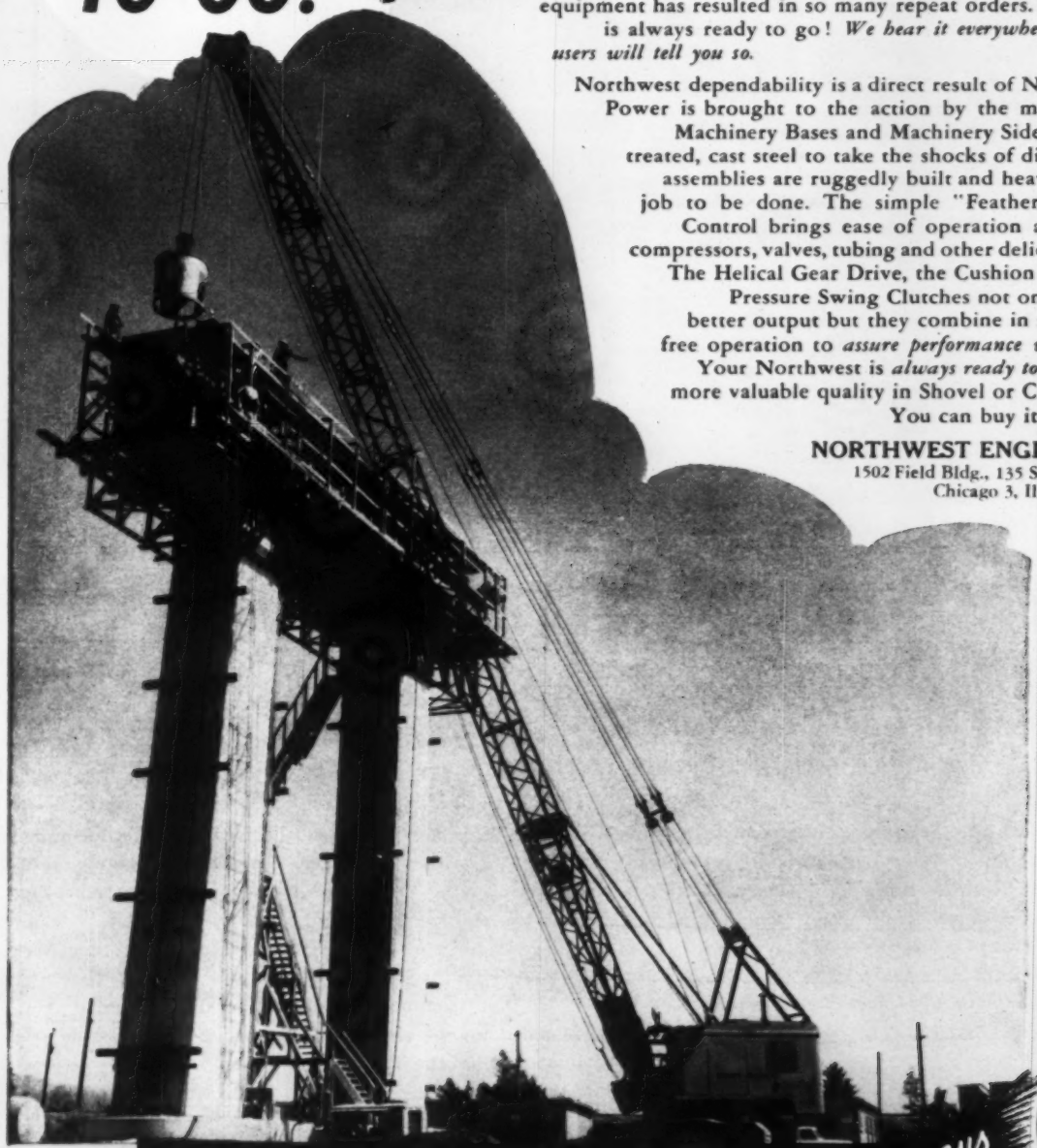

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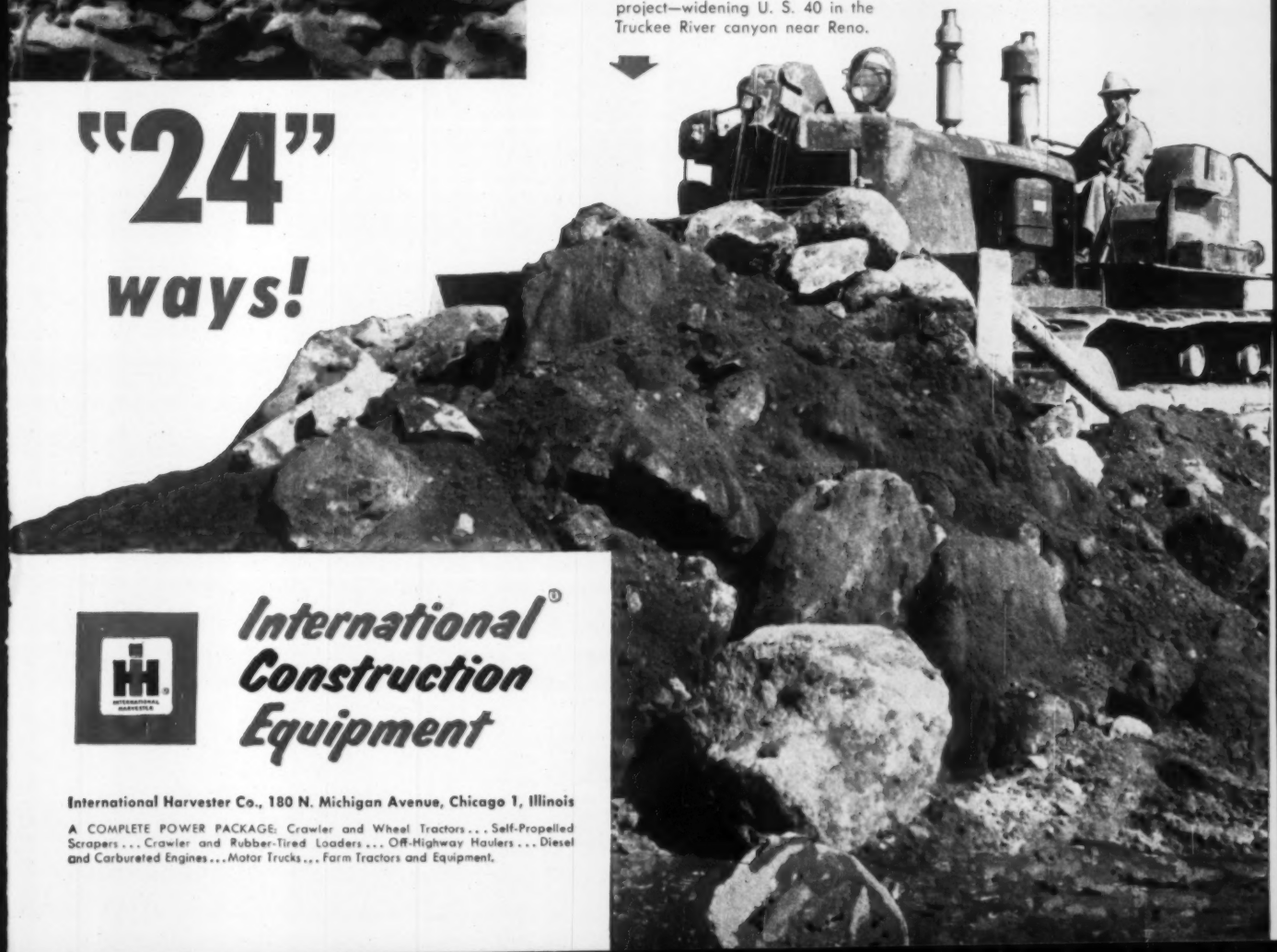
"24" ways!



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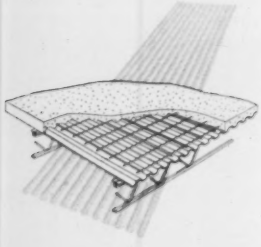

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Reader Comment

Road Analysis Questioned

Sir—In the article by Robinson Newcomb (ENR June 19, 1958, p. 38) the author has not only made very questionable use of otherwise interesting statistical data, but has drawn some conclusions which are dangerously misleading.

The author's thesis is based largely on the fact that in 1933, when rebuilding expenditures were suddenly cut back, the trend in highway traffic growth also leveled off. Certainly an adequate highway system (which implies highway construction expenditures) can be expected to affect the volume of traffic which moves.

But then, so will a lot of other things affect traffic volumes. Statistically, unless all of the other independent variables in the picture remain substantially constant, one is not justified in presenting data in such a way as to imply that the dependent variable here, vehicle miles per dollar of GNP, depends on only one independent variable—in this case, highway construction dollars.

It seems clear that around 1933, readjustment of our national economy was affecting highway transportation in a lot of ways. The cutback in highway construction was probably just as symptomatic of this fact as the leveling off in traffic growth.

But Mr. Newcomb has done another thing here which is even more misleading. At the outset of his article he states that, "Adequate highways increase the GNP by making it possible to move a greater volume of goods economically." The implication here is that other forms of transportation are incapable of doing this because they are less economical. The truth of the matter is, that except for the short-haul, small-lot movements which comprise a small percentage of the national transportation requirements, highway freight transportation is much less economical than our other forms of transportation: pipelines, railways, and the inland waterways. Highway passenger transportation, though it offers many intangible advantages, has similarly not been

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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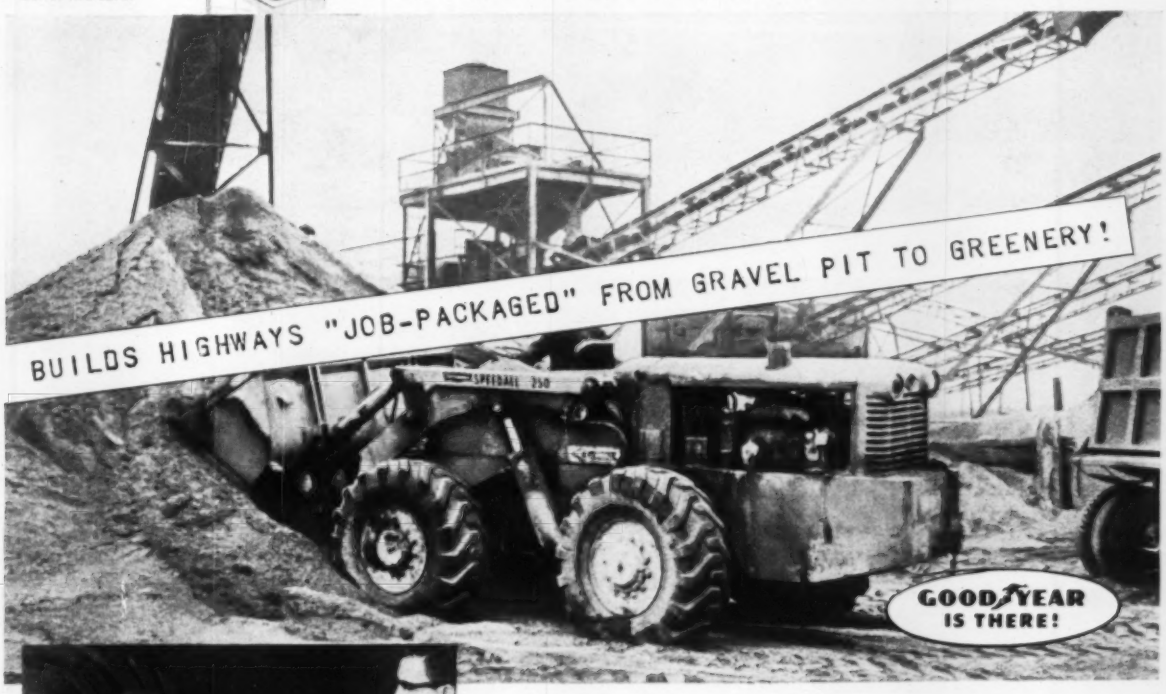

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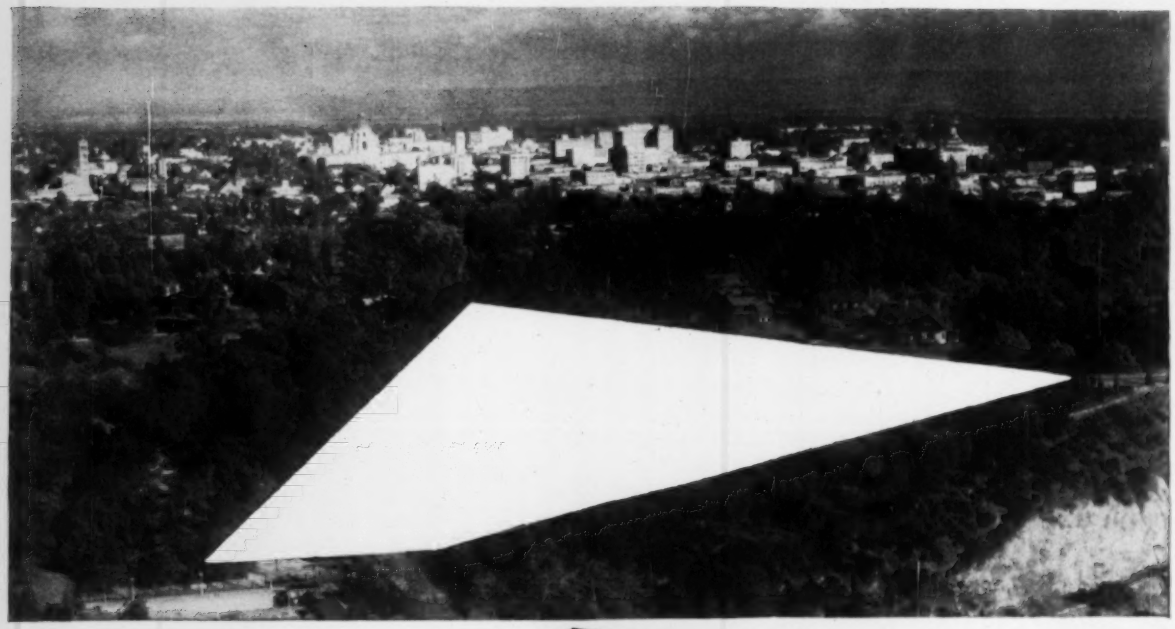

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For Timed Selling to the Construction Industry

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you can't bargain with safety

While your use of wire rope differs from this carrier application, *safety should be just as important to you.* For, although a "bargain" rope may save you money, it can cost you your peace of mind. So don't bargain with safety. Buy a rope that's a *quality* rope—buy Wickwire Rope. 5049

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PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
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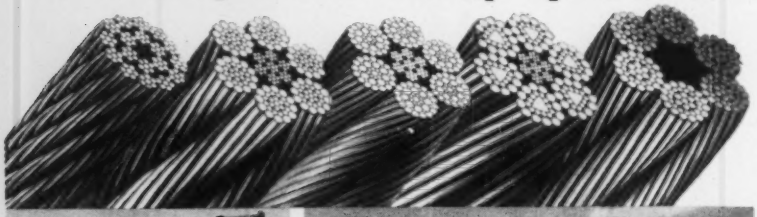
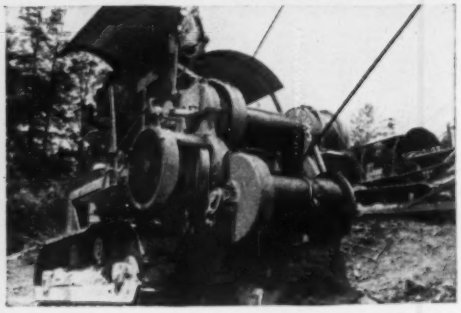
is this your wire rope problem?





Matching type or construction to the job is key to wire rope efficiency and economy.

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The ideal wire rope for guying a mast would go to pieces in jig time if used as a hoist rope. Similarly, the best rope for the latter would soon be ruined by bending fatigue if used on equipment which has too small sheaves or requires numerous reverse bends. How to coordinate wire rope and the job to insure maximum service life and operating efficiency in all such variations is very clearly told in Service Bulletin No. 107. Copies free on request. Write H. K. Porter Company, Inc., Leschen Wire Rope Division, 2727 Hamilton Ave., St. Louis 12, Missouri.

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proved economically superior in its present form.

As the author implies highway transportation is the well-spring of business growth because of its inherent economic advantages, is to play loosely upon public ignorance of the facts.

Investment in any industry or public facility is a stimulant to economic growth. The important thing is not merely to invest, however, but to invest where there will be the greatest return. As indicated above, there is some question as to whether investment in highways gives us the most transportation for our dollar.

This is not to argue against highway construction, or even against the thesis that the present program is not big enough. It probably *is not* big enough; but the justification for such a belief lies elsewhere than in the very shaky sort of thinking to which Mr. Newcomb would have us subscribe.

A. S. Lang
Assistant Professor of Transportation Engineering
Cambridge, Mass.

Confidential Bidding

Sir—Judging from your editor's note to my letter in reference to Japanese bids on recent Snowy Mountains Authority work (ENR June 19, p. 9), it seems that there may be a misunderstanding in the U. S. regarding public works contract procedure in Australia.

In Australia, contract bids are treated as strictly confidential. There is no public opening of bids as is usual in the U. S. and the unsuccessful bids are not published even after the award of contracts.

A. Humphrey
Liaison Officer
Snowy Mountains Hydro Electric Authority
Denver Federal Center
Denver, Colo.

Longest Continuous Truss?

Sir—One of the units in the south approach of the Mackinac Bridge is a four-span continuous truss 2,080 ft long. (The spans are 480, 560, 560, 480 ft.) I believe this is the longest continuous truss in the world.

D. B. Steinman
Consulting Engineer
New York, N. Y.

Can any readers top that?

CALENDAR

Hydraulics Division, American Society of Civil Engineers, 7th national conference, Georgia Institute of Technology, Atlanta, Ga., August 20-22.

You get *ONE EXTRA PAYLOAD in every eight!

Now! Anthony Frameless Dump Trailer units are available in steel (shown) or aluminum for still greater payload potential. Single or Tandem Axle models in lengths up to 24 ft.

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Whatever your operation may be, you'll reduce hauling costs with ANTHONY Dumping Equipment. That's because every ANTHONY model—like the Frameless Dump Trailer you see above—is *engineered* to give up to 12% extra legal payload on every trip you make.

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The net result? You get up to 1000 lbs. of "bonus" legal payload on ANTHONY Dump Bodies . . . and up to 4000 lbs. on ANTHONY Frameless Dump Trailers!

Why not learn now how you can haul all the extra payload *your* laws allow. ANTHONY Engineers have it figured for the area in which you operate . . . complete with Hoist and Body combinations keyed to specific truck models. To get this FREE data, contact your regional ANTHONY Distributor or use the coupon below.

In the South, ANTHONY Dump Bodies are manufactured by Taylor Machine Works, Louisville, Miss.

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8214

How one 2½-yd. shovel moves 2,000 yards of hard sandstone, clay and shale a day on Ohio road job

5th Manitowoc for Hatcher Bros. Pays Off on Road Building

This Manitowoc Model 3000 shovel equipped with a 2½-yd. bucket has been averaging 2,000 yards of sandstone, shale and clay per 10 hour day working on the rebuilding of Route 39 near Salineville, Ohio. Hatcher Bros. Inc. of Mingo Junction, Ohio is handling all the excavating and grading on the $417,000 job which calls for the regrading and removal of 117,000 yards of material, containing approximately 33% rock. In addition to the Model 3000, the company also owns two Manitowoc 1¼-yd. Model 2000 rigs and two 40-ton Model 2800 Mobile Cranes.

300,000 Yards of Rock — Prior to the present operation, the 2½-yd. shovel loaded out 300,000 yards of rock on another Ohio road job. The machine was moved to the present location in only three loads. "On both jobs," says Mr. Jim Smith, Superintendent, "the shovel has given us smooth, uninterrupted performance, with no appreciable downtime. We have never hit a rock formation that the machine could not break up and carry . . . nor have we been halted by a machine failure."

How You Can Benefit — Fleet owners like Hatcher Bros. know they can depend on their Manitowoc rigs for consistent, high output performance on any job. Judge for yourself . . . see your distributor soon for full details on any of the eight bonus-capacity Manitowocs.

Manitowoc shovel cuts a 1' x 1' slope through stratified hard sandstone. Thirty per cent of the excavated rock is used as fill.

Manitowoc

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(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	½-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.

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Rolling Mills well equipped

From the onset AEG were leading in the development of electric rolling mill drives. Today we supply main and auxiliary drives, control and regulating equipment, for heavy duty reversing, continuous hot-rolling and cold-rolling mills.

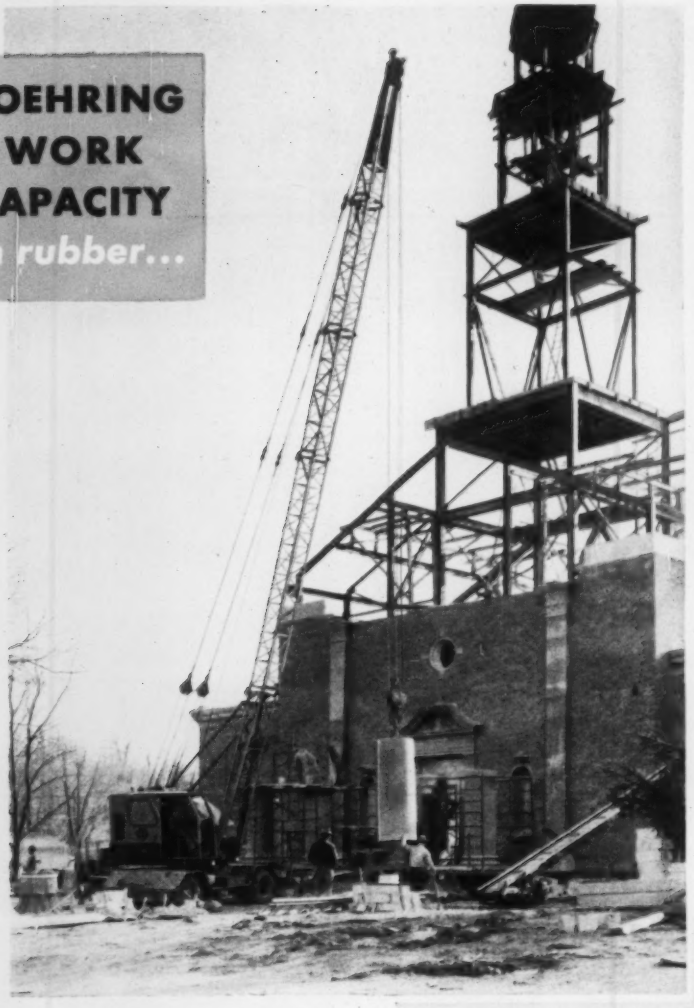
Nine 350 kW -400/1600 rev/min motors for the Finishing Train of a Continuous Small Section Rolling Mill (Roughing Mill at rear)

7973e

ALLGEMEINE ELEKTRICITÄTS-GESELLSCHAFT

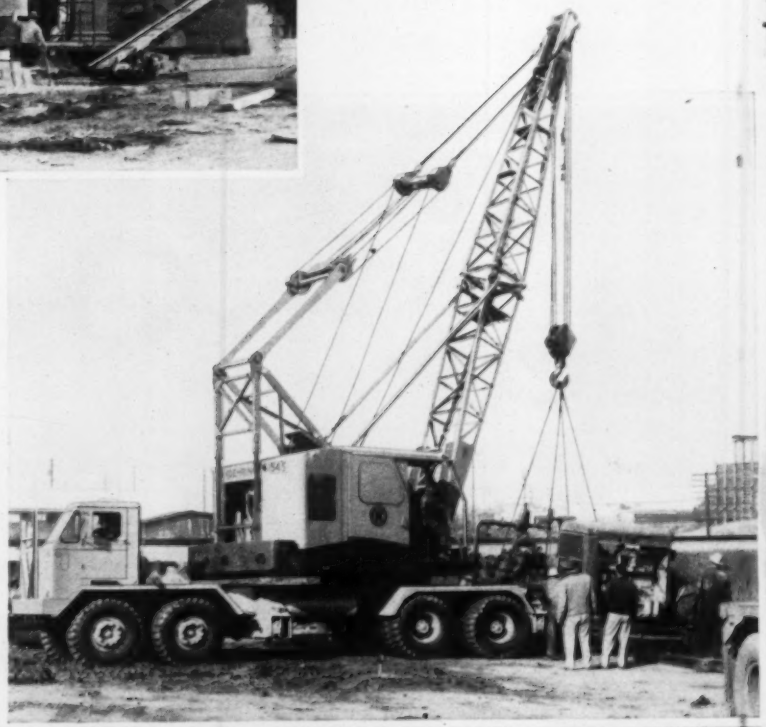
Berlin (West) EXPORT DEPARTMENT Frankfurt (Main)

KOEHRING WORK CAPACITY on rubber...



Heavy church pillars, and elaborate pre-cast concrete base and cap sections received careful, precision handling with this Koehring® 205 Cruiser® crane on the job. Carrying 65-foot boom, it set up row of tall columns at church entrance, and helped erect steeple and high, arched roof. *One man* controls all operations — *one engine* supplies all power for work and travel on this 205 Cruiser. There's a full range of working speeds up to 7 mph — *plus travel speeds up to 21.5 mph!* Has torque-converter on 4-wheel drive, automotive power-steering, 27½-foot turn radius, 30% gradability. *Lifts up to 15 tons.* Boom lengths: 25 to 70 ft. — or max. 95-ft. boom-and-jib. Highway travel unrestricted. Overall width, 8 ft. Axle-load distribution meets highway regulations in most areas, even when carrying 25-ft. folded boom.

A large companion-model Cruiser has just been added to the Koehring line — new 305, with 25-ton lift capacity, and travel speeds up to 18 mph.

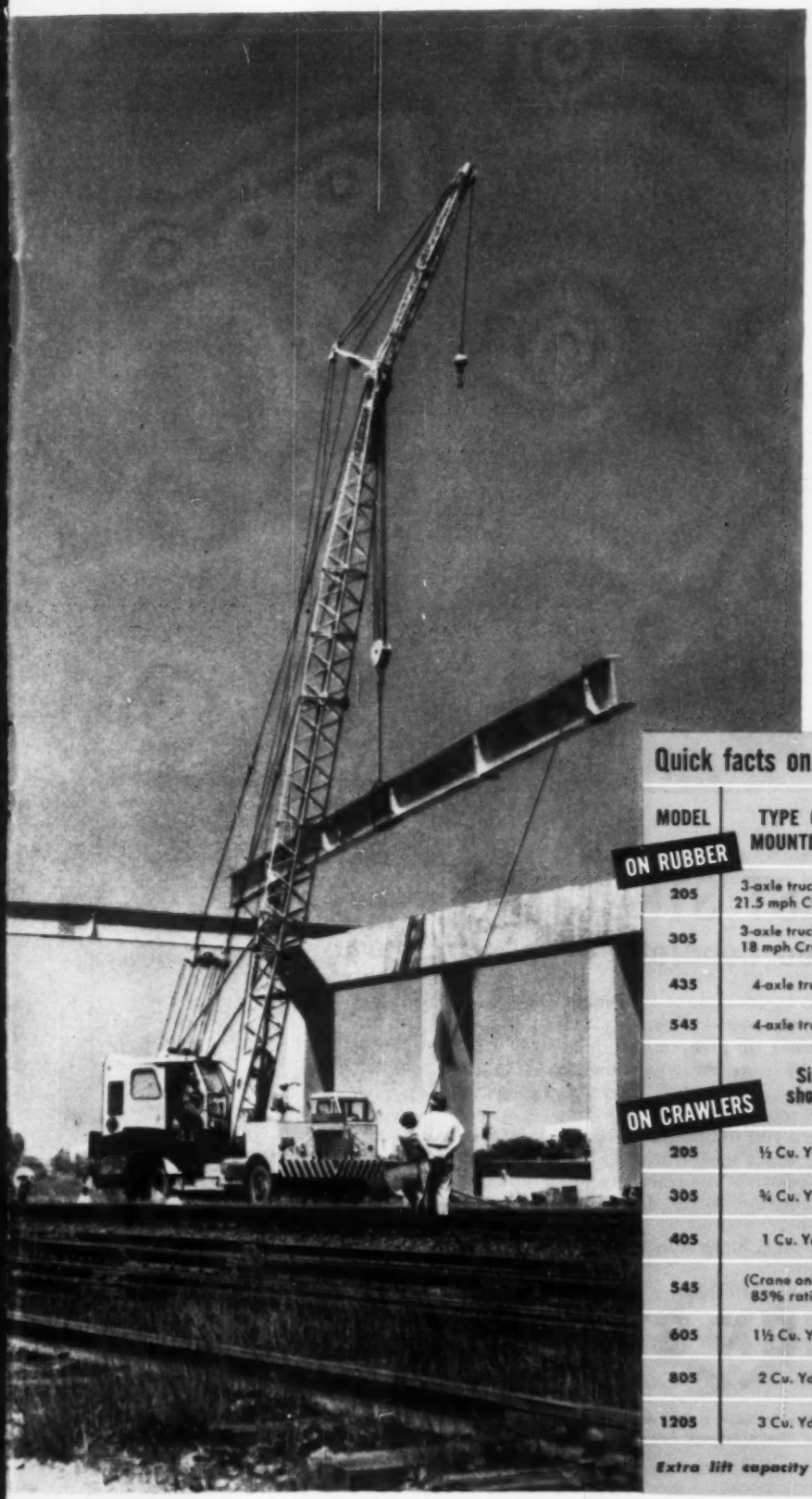


45-ton handyman — To unload and place skid-mounted mud pumps, engines and other machinery for a new oil field installation, a big 545 truck crane (right) was put to work. Heaviest load was 23 tons — an easy lift for the Koehring 545! In fact, it can pick up 45 tons with 40-foot boom *at 15-foot radius.* On high-lift work, it handles up to 120 feet of main boom — or 150 feet of boom-and-jib. Removable counterweight, boom and outriggers reduce machine weight — give quick conversion from fully-equipped crane to roadable machine for highway travel. Top road speed on mobile 545 is 31.8 mph.

All models on rubber and crawlers are listed in chart on next page. Pick the size that best suits your needs — then ask Koehring distributor to demonstrate it. Call today.

KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wisconsin

Koehring excavators and cranes also manufactured in: CANADA • ENGLAND • SPAIN • JAPAN



Highway overpass—Look at the reach of this Koehring 305 truck crane setting steel girders on a new bridge. It's handling the heavy loads off the end of a 60-foot boom — and carries a 15-foot jib for the extra-high lifts. But that's not the limit of its reach. This truck-mounted 305 can raise up to 100 feet of main boom, or maximum 130-foot boom-and-jib, *with low A-frame!* Butt-connected boom is safe — solid. Inserts are easily changed. Only 2 bolts per corner. Lifting capacity of 25 tons (see chart) increases *work capacity* with all attachments. As a clamshell or dragline, truck-mounted 305 handles ¾ to 1-yard buckets, converts to ¾-yard shovel or hoe. Also available on crawler mounting — *or as an 18-mph self-propelled Cruiser crane.*

Quick facts on KOEHRING WORK CAPACITY:

MODEL	TYPE OF MOUNTING	CRANE LIFT CAPACITIES (Rubber-tired machines rated at 85% of tipping load.)	
ON RUBBER			
205	3-axle truck, or 21.5 mph Cruiser	30,000 lbs.	at 12-ft. radius
305	3-axle truck, or 18 mph Cruiser	50,000 lbs.	at 12-ft. radius
435	4-axle truck	70,000 lbs.	at 15-ft. radius
545	4-axle truck	90,000 lbs.	at 15-ft. radius
ON CRAWLERS	Size shovel	CRANE LIFT CAPACITIES (Crawler ratings based on 75% of tipping load.)	
205	½ Cu. Yd.	20,000 lbs.	at 10-ft. radius
305	¾ Cu. Yd.	30,000 lbs.	at 12-ft. radius
405	1 Cu. Yd.	40,000 lbs.	at 12-ft. radius
545	(Crane only — 85% rating)	90,000 lbs.	at 12-ft. radius
605	1½ Cu. Yds.	72,300 lbs.	at 12-ft. radius
805	2 Cu. Yds.	104,200 lbs.	at 12-ft. radius
1205	3 Cu. Yds.	190,000 lbs.	at 12-ft. radius

Extra lift capacity means . . . **MORE WORK CAPACITY WITH ALL ATTACHMENTS**

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NATION'S TALLEST STRUCTURE

Built with Reinforced Concrete

Forty stories of concrete reinforced by Ryerson re-bars make the Executive House a unique addition to Chicago's skyline.

Ryerson reinforcing steel was used throughout the building—in the concrete framework columns, in 57 caissons 120′ below grade, in the concrete shear walls.

On huge jobs like this, or jobs requiring only a few tons—you can depend on Ryerson. Ryerson offers you unlimited stocks of every reinforcing steel . . . fabricates to your exact specifications . . . provides setting plans . . . tags the steel for positive identification. And you can count on Ryerson to deliver on schedule, to the day or even the hour you specify.

Ask your nearby Ryerson plant for a lump sum or an average pound quotation on your next job.

Executive House—Architect: Milton M. Schwartz & Associates, Chicago. Structural Engineer: Miller Engineering Co., Chicago. Concrete Contractor: C. A. Tharnstrom & Co., Skokie, Illinois.

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THE CONSTRUCTION WEEK

WASHINGTON VIA UTAH?—Ellis L. Armstrong, who only last year left Uhl, Hall & Rich on the St. Lawrence Power Project to take the top State Road Commission post in his home state of Utah, is slated to become Commissioner of the Bureau of Public Roads. At press time it was assumed Mr. Armstrong's acceptance was in the mail to Washington: BPR would say only that he had been invited to fill its key post, and in Salt Lake City questioners were referred to Washington. Mr. Armstrong will succeed C. D. Curtiss, who retired.

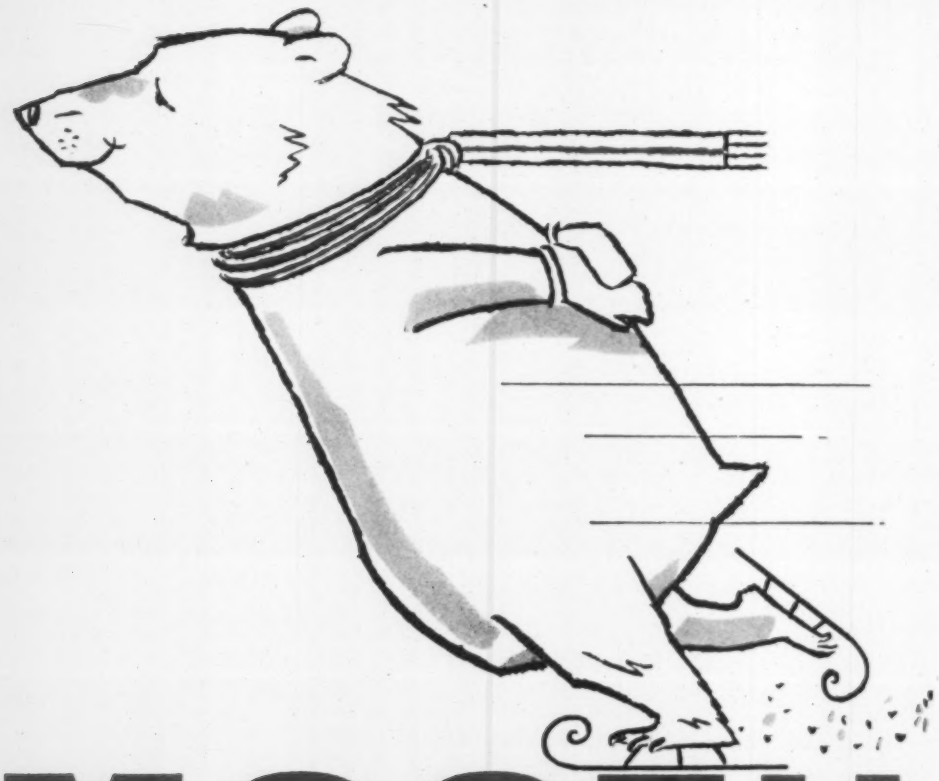
NO TRAFFIC PROBLEM HERE—Connecticut's Highway Commissioner last week acknowledged existence of a $60,000 "bridge to nowhere." The new bridge crosses the Norwalk River and the road it carries dead-ends almost immediately. There's just one house (occupied by a widow) on the stretch of road past the bridge. The bridge was built with state emergency relief funds, at the request of Wilton, Conn.'s selectmen. Commissioner Newman E. Argraves says the law would not permit refusal of the town's request.

EUCNIK BLOWS ITS TOP—Western Construction Corp.'s mountainous Eucnik barely managed to make a molehill last weekend at the Oahe Dam closing. On its first load, the 80 cu yd dump truck (ENR April 24, p. 60) blew the cap of a hydraulic cylinder and never did get back in the earthmoving line.

OPTIMISTIC HYDRO REPORT—Current studies of a 3 million kw hydro scheme on the Peace River in northern British Columbia are yielding "even more than we expected." The "we" is Axel Wenner-Gren, Swedish financier, who has a contract with the British Columbian government to develop an integrated industrial area based on low cost water power (ENR Nov. 7, 1957, p. 27). A Wenner-Gren spokesman says final decisions will be made in 1959; actual development will begin in 1960.

MYSTERIOUS NUMBER—People connected with the new Air Force Academy project are a bit puzzled. A House Appropriations Committee report issued last month uses a $300 million estimate for the project's cost. But last week at the site in Colorado Springs, Colo., construction was reported 83.4% complete—$94.5 million spent out of $114 million authorized by Congress. The Secretary of the Air Force recently gave Congress an estimate of $190 million for all facilities now contemplated.

SCHOOLS FOR LESS—On discovering that school construction in New York City is now costing 15% less than estimated, the United Parents Associations told the Board of Education: "This would appear to be a favorable time to speed up the entire building program."



SMOOTH

Once you've mixed Penn-Dixie "One Package" Mortar Cement with the recommended amounts of sand and water, you'll see how its buttery consistency makes for easy workability on any job.

Penn-Dixie Mortar has every quality that top-grade masonry requires. Easy mixing, precision-timed hardening and excellent water repellency when set. High yield without sacrificing strength, too. Its job-site economies have been proved time and time again.

Use or specify Penn-Dixie "One Package" Mortar Cement. You'll find it pays!

Penn-Dixie means Permanent Dependability

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WASHINGTON OBSERVER

- Russian information now available
- Pentagon's surplus policies hit
- Tax break for self-employed?
- Outlook for Seaway tolls

● **An increasing volume of Russian translations will be available to business from the government.** Secretary of Commerce Weeks has announced creation of the Foreign Technical Information Center, which will compile translations and sell them to the public.

Some 141 technical journals are now available for purchase. The information center will begin publishing an abstract journal of papers available this fall. By writing to the Office of Technical Services, U. S. Department of Commerce, you can now get these translations from the information center:

Concrete and Reinforced Concrete (PB 141090T), monthly, $6 a year.
Hydraulic Engineering Construction (PB 141091T), monthly, $6 a year.
Hydraulic Engineering and Soil Improvement (PB 141092T), monthly, $6 a year.
Mechanization of Construction (PB 141093T), monthly, $6 a year.
Cement (PB 141094T), bi-monthly, $3 a year.

● **Congress is complaining again about Pentagon surplus disposal policies.** The House Government Operations Committee chairman, William Dawson (D.-Ill.), centered his criticism this time on the Air Force. After hearing witnesses for three days last week, Congressman Dawson charged the Pentagon was hurting U. S. manufacturers and distributors by unloading equipment as surplus. H. D. Anderson, representing the Associated Equipment Distributors, testified the Air Force has been declaring heavy construction equipment surplus. An example: $10,000 cranes, which sell at a used price of around $3,000 each.

● **The House has passed a bill allowing self-employed taxpayers—consultants, for instance—to defer tax payments** on premiums for retirement insurance policies until they are 70. The idea: Such taxpayers would pay a lower tax rate then because of lower annual income after they've retired.

Chances are still against final approval of the legislation this session: It passed the House over opposition of Ways and Means chairman Wilbur Mills (D.-Ark.), and Senate tax experts are against it too. Odds are against it getting out of the Senate Finance Committee.

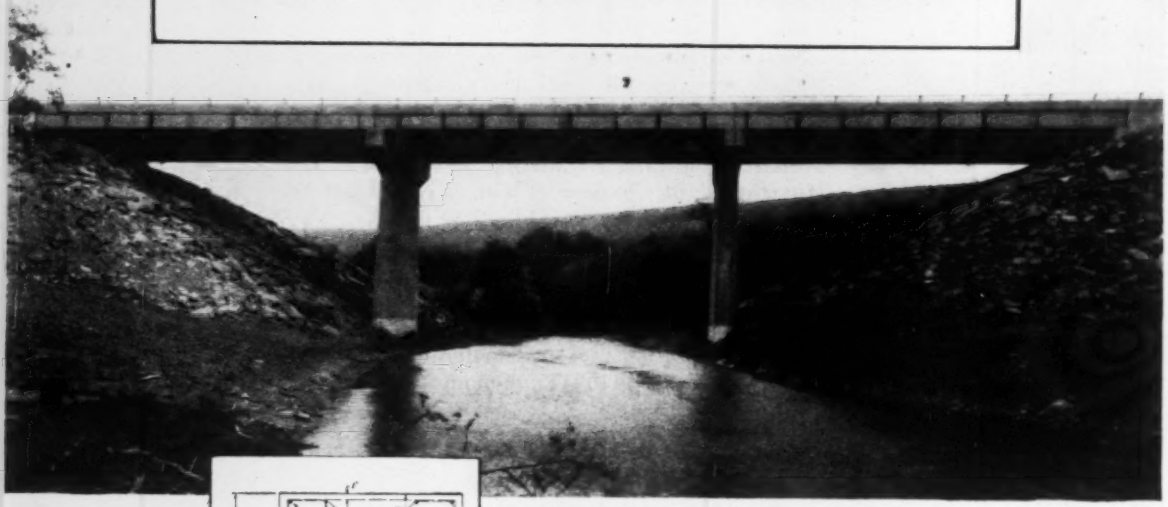
Tax men fear the same deferment would eventually be given company-sponsored retirement plans which could cut the Treasury's tax take by "several billions."

● **You'll probably get a final word on Seaway tolls around the first of the year.** That's the reason for the quick hearings this week on the rates proposed by the U. S.-Canadian Tolls Committee. There are a lot of steps that have to be gone through—and quite a lot of time needed to get the machinery working after the final tolls are announced and before the Seaway opens in April or May.

Right now, there's almost no speculation about chances for changes in the tentative rates under attack in the hearing. The two sides are saying about what they've always said: Railroads and eastern ports want tolls to be higher, shippers and Great Lakes interests want them lower.

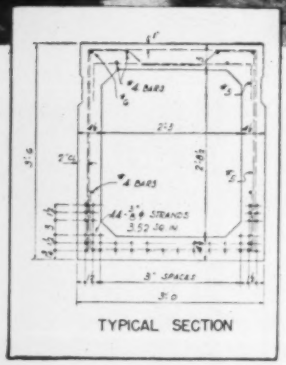
President Eisenhower has the final decision on recommendations to him by the U. S. Seaway agency. Then State Department will work out the last details with the Canadians.

82-Foot Prestressed 'Incor' Box Beams SPAN TROUBLED WATERS



HOLLOW BOX BEAMS

Rectangular void, for economy in weight and material, runs length of beam. Total prestressing force—392 tons per beam. (below) Bridge length is 244 feet. Spans consist of 12 units, 36 inches wide. Deck width, 36 feet.



TYPICAL SECTION

● Among the flood control projects in the State of Pennsylvania is the Stillwater Reservoir that impounds waters of the Lackawanna River. Relocation of the highway in that area was part of the project, which included bridging the east branch of the river.

Need for economy and speed of erection in construction of the bridge determined the use of 36 long-span, prestressed, hollow box beams, each measuring nearly 82 feet in length, weighing 31 tons. Fabricated by Atlantic Prestressed Concrete Company in Trenton, New Jersey, the beams were transported over mountainous terrain to job site—a distance of 170 miles.

Economies were effected in the casting operation through use of 'Incor'*, America's FIRST high early strength portland cement, making possible early stripping of forms and fabrication at production-line speed.

Fabricator and engineers alike merit high praise in solving the knotty problems of transporting and erecting these giant beams—an outstanding performance in efficiency and skill.

*Reg. U.S. Pat. Off.

STILLWATER RESERVOIR PROJECT
Corps of Engineers, U. S. Army, Baltimore, Maryland

General Contractor
LATROBE ROAD CONSTRUCTION, INC.
Latrobe, Pennsylvania

Consulting Engineers
GANNETT, FLEMING, CORDDRY & CARPENTER, INC.
Harrisburg, Pennsylvania

Supplier of Prestressed Members
ATLANTIC PRESTRESSED CONCRETE COMPANY
Trenton, New Jersey

'Incor' Concrete supplied by
WARNER COMPANY
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 21 MODERN MILLS, 48,900,000 BARRELS ANNUAL CAPACITY

Second Biggest Boom Ahead

- **This year, contract awards will top 1957 by 8%, the sharpest construction recovery ever registered**
- **Next year, awards will pass $20 billion—3% better than 1958; public works will lead the way again**

Those predictions by ENGINEERING NEWS-RECORD spell good news for construction men. The rising tide in contract awards will make 1959 the second best year in construction history. Awards will soar to $20,150 million, second only to the 1956 record of $21,712 million.

This year, contract awards will total $19,480 million, topping 1957 by 8%, ENR forecasts. That will cap the best recovery ever recorded.

The boom in heavy construction contract volume now is in its eighth month. It started in December 1957 at the bottom of an 18-month recession. Then ENR award figures climbed for seven consecutive months. May, June and July (see p. 110) each set all-time highs for contracts let in those months.

• **Booms differ**—The 1958-59 boom in contracts is sharply different from the 1955-56 boom.

The last boom was based on industrial and housing construction. This one will be dominated by state and municipal public works for the next 18 months. ENR predicts the 1958 public works total will be 16% greater than 1957 to establish a new all-time high of $8,600 million. But this record will be short-lived. It will topple in 1959 when a further rise of 10% to $9,425 million will be recorded.

Federal construction should score a 50% boost in 1958 awards. And 1959 is expected to be almost as strong. ENR predicts federal agencies will let $2,650 million in contracts next year, only $200 million under this year's expected total. That will make 1958 and 1959 the third and fourth biggest years for federal awards since World War II. Only 1952 and 1950 will outshine this year and next; both included $2 billion in atomic energy plant contracts.

Private construction will make a good comeback. Awards are firming up now. They will continue to gain strength in the next 18 months. Next year will be better than 1958, although '58 awards will run 4% lower than 1957's total and 40% less than the 1956 peak.

ENR forecasts that private awards will rise 1% above this year's total to $8,075 million.

• **Economic implications**—The sharp 1958 rebound in heavy construction contract awards may well feed on itself. This would result in an even larger volume of construction contracts than projected in this preliminary forecast for 1959. That's particularly true of private construction, but it's not limited to that. Here's why:

The construction industry's customers are a broad cross-section of individuals, businesses and government agencies. All make decisions on whether to invest in new facilities that can pay for themselves and make a profit. Rising construction contracts mean more and more people are making commitments in favor of investment. Conversely, a drop in awards means fewer decisions are being made and that some plans may be either canceled or trimmed.

The shifts in investment commitments shown by ENR awards affect economic activity as measured by Gross National Product estimates. For example, the recession in contracts from mid-1956 to December 1957 contributed to the declines in GNP in the fourth quarter of 1957 and the first quarter of this year. The lag results from the fact that GNP measures the rate of spending, but construction contracts represent commitments to spend in the future.

Similarly, the reversal of the contract down trend in the first quarter of this year and the accelerating rise during the second quarter indicated a corresponding turn-around in GNP. Second quarter GNP estimates did move up slightly over the first quarter—0.5%. This reversal is expected to carry higher in the second half of 1958.

So, with economic activity turning up, more people will decide to move ahead with new construction. As of July 31, heavy construction projects estimated to cost $111.6 billion were in the planning stage, according to the ENR backlog. Included are many projects—especially private work—proposed during late 1956 and 1957. However, some of them did not go to construction contract because of "tight" money, high interest rates and other clouds on the economic horizon, such as rising unemployment, reduced overtime work, rising inventories and dwindling orders.

Now the economic climate is changing, and borrowing costs are substantially lower today than a year ago. These factors could accentuate the uptrend in construction contracts during the coming 18 months. Here's a rundown on how specific markets look.

• **Public works**—Several records will be established here in 1958, only to be tumbled in 1959.

ENR predicts that in 1958 new records will be set in:

Earthwork-dams-waterways, up 1%; highways, up 18%; public housing, up 95%; sewerage, up 8% and waterworks, up 8%.

Climbing to greater heights in 1959 over 1958 will be:

Highways, up 14%; sewerage, up 8%, and waterworks up 13%. Bridges in 1958 will come close to their 1957 record, but will not break into new high ground until next year when a 17% jump is predicted.

Other types of work also are climbing, but they won't break any past records. Public building other than housing is setting a very fast pace this year. This year's total will top last year by 9%. Next year, a further rise of 1% is forecast. The 1958 and 1959 predicted totals are not up to the great volume of awards in 1950 and 1952, which included atomic energy plants. However, 1958 and 1959 are far above other postwar years, and would be much above 1950 and 1952 totals if A-plant awards were excluded.

Public "unclassified" construction this year should leap 44% over 1957. Another 14% boost is expected in 1959 for a postwar record of $1,600 million. Hikes in military construction (primarily air and missile bases) and tunnel construction awards will account for the rise. The major project in this category for 1959 is the proposed second Chesapeake Bay crossing—a combination bridge-tunnel job now being negotiated and expected to cost $137 million.

There will be two declines in 1959 from this year—earthwork-dams-waterways and public housing construction awards.

Earthwork-dams-waterways will drop

Forecast: '59 Construction Contracts

000 omitted

	1957 Actual	1958 Forecast* Volume	Chg. '57-'58 %	1959 Forecast Volume	Chg. '58-'59 %
ALL HEAVY CONSTRUCTION	$17,986	$19,480	+ 8	$20,150	+ 3
By Ownership					
Private	8,386	8,030	− 4	8,075	+ 1
Public	9,600	11,450	+19	12,075	+ 5
State & Municipal	7,415	8,600	+16	9,425	+10
Federal	2,185	2,850	+30	2,650	− 7
By Type of Work					
Public					
Waterworks	369	400	+ 8	450	+13
Sewerage	556	600	+ 8	650	+ 8
Bridges	772	750	− 3	875	+17
Highways	2,964	3,500	+18	4,000	+14
Earthwork, waterways	969	975	+ 1	800	−18
Buildings, excl housing	2,353	2,575	+ 9	2,600	+ 1
Housing	642	1,250	+95	1,100	−12
Unclassified	975	1,400	+44	1,600	+14
Private					
Mass housing	3,041	3,800	+25	4,000	+ 5
Commercial	1,754	1,780	+ 1	1,925	+ 8
Industrial	3,081	1,900	−38	1,500	−21
Bridges	9	10	+11	10	0
Unclassified	500	540	+ 8	640	+19

** Based on actual ENR seven months volume*

18% next year, because most of the contracts for the New York Power Authority's Niagara Power Project are being let in 1958. However, there is one big one that is counted on to take up some of the slack: the $200 million Wanapum Dam on the Columbia River for the Grant County Public Utility District in the State of Washington. This was the PUD that awarded the $92 million Priest Rapids Dam in 1956. Bids on Wanapum are expected to be called in December, so there is a chance the contract may fall into the 1958 total instead of 1959. Should this occur, the 1958 forecast would go up and the 1959 forecast down by the amount of the award.

Public housing is expected to drop next year from 1958's predicted total. Although local housing projects should continue their 1958 climb next year, awards for "Capehart" military housing appear to be topping out after a sensational climb this year. Compared to an estimated 1958 total of about $800 million in "Capehart" awards, 1959 is expected to decline to about $500 million.

• Private work strengthens—Most major types of private heavy construction should rise in 1959, but industrial building will continue to remain in the doldrums.

Commercial building will continue to rise in 1959 and should score an 8% increase over 1958, to $1,925 million. However, volume will not quite reach 1956's all-time high of $2,051 million.

Within months, natural gas pipeline construction is expected to rise sharply. This will help push private "unclassified" construction contracts to a volume 19% higher than the low 1958 total.

Housing will do better in 1959 than in 1958, ENR predicts. Right now, mass housing has firmed up as some of the big mass developers return to the housing market. Easier credit conditions, increased savings, and the uptrend in employment, will help home buyers. Also, the rise in apartment house construction should continue. Both factors will work toward a modest 5% gain in total mass housing awards next year. In fact, they already have brought a turn-around in housing—the 1958 total is estimated at 25% more than 1957.

Industrial construction is the one weak spot in private work. Currently, all the advance indicators point to a continued decline in next year's awards —somewhat slower than those in 1957 and 1958. However, there are some hopeful signs. The improvement in other types of construction already is boosting demand for construction materials and machinery. As sales volume gets back on the growth curve, companies may start pushing plans for new plants to improve their competitive position through more economical production and market expansion. If such a move starts in 1959, it could pull industrial construction out of its present slump.

• The dark horse—The preliminary forecast of heavy construction awards for 1959 excludes Alaska, the forty-ninth state-to-be. But on the basis of projects proposed in the past 18 months, Alaskan contracts will move up sharply. During the first half of 1958, ENR reported proposed projects of $64.9 million, compared with $54.4 million proposed during all of 1957. As of June 30, ENR's backlog of heavy construction in Alaska totaled $245 million.

Electric power generation, transmission and distribution facilities will help lead Alaska's construction upsurge.

• How we do it—ENR bases this forecast of heavy construction contracts on its reports of projects entering the planning stage.

The monthly inventory of all such projects—ENR's backlog—represents potential future contract awards. The most sensitive indicators of future contracts over the short term—one or two years—are the flow of new work into the backlog and the flow of projects out of the backlog into construction contract. When more work flows in than flows out to contract, it shows that the volume of work in the planning stage is increasing. When the inflow is less than the outflow to contract, there is a decrease in jobs being planned.

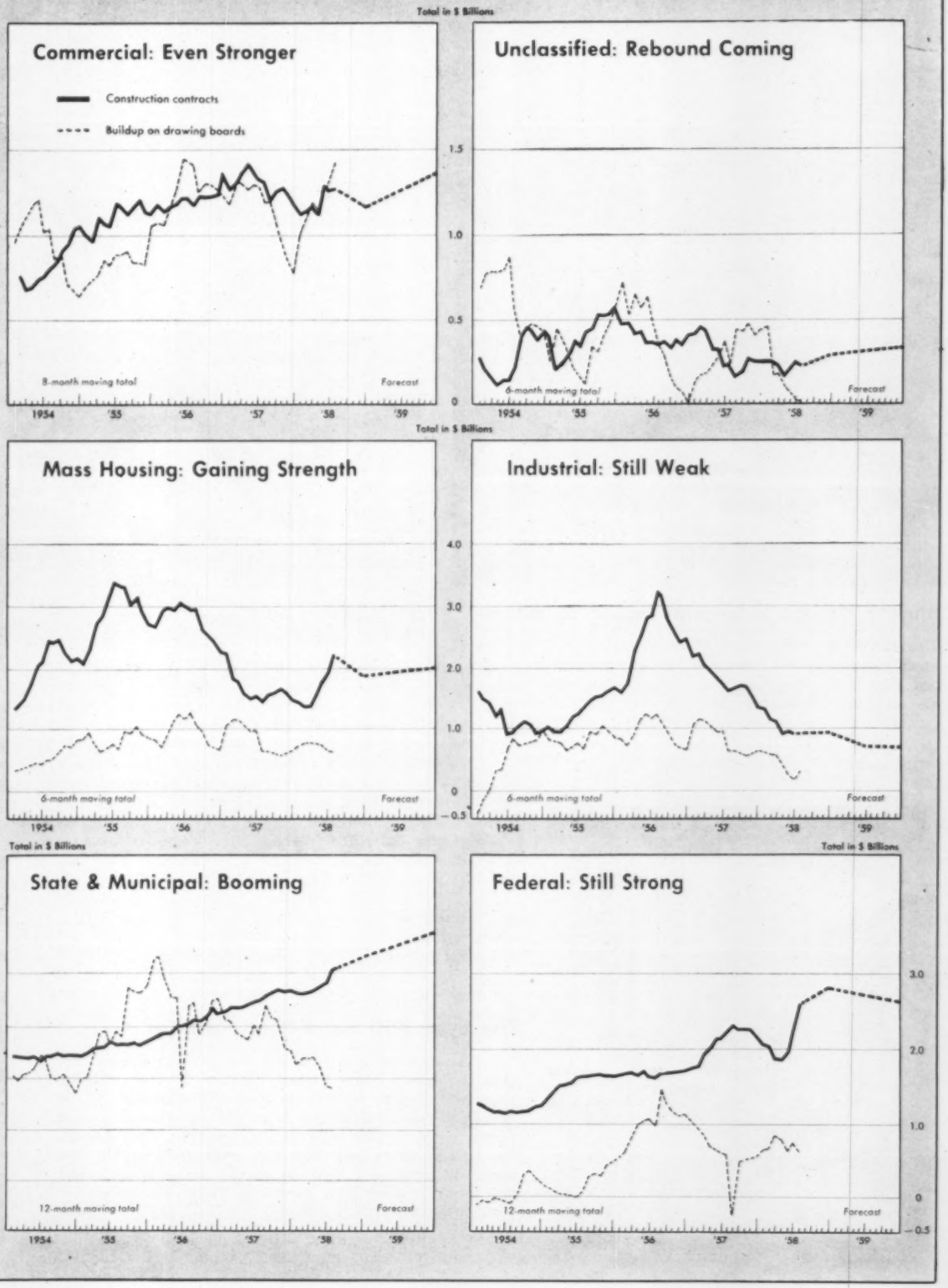
The length and depth of these fluctuations in construction on the drawing boards is a key to future trends in contracts, particularly the turning points (see charts, p. 23). ENR uses moving totals in the charts to clarify the relationship between fluctuation in work planned and contracts. This fluctuation is called a "pressure gap."

For private work, a six months moving total is used, because most of it moves out of the backlog within a year of the date proposed. An eight months moving total is used for commercial building. For public works, ENR uses a 12 months moving total because the lag between proposal date and contract date is much longer. About half of the projects moving out of the backlog into construction contract have taken two years or less in planning; the other half takes over two years.

Total contracts reported include jobs that do not pass through ENR's backlog. That's because information is not available from the owners at the time of planning, or the start of the project actually is the first announcement, as in the case of most private housing.

There's another factor that contributes to the spread between total contracts and flow out of the backlog. The project retains its original estimated cost while in the planning stage. If it remains in the backlog for a year or several years, chances are its contract cost will be higher than the original estimate.

How '59 Contract Trends Shape Up...

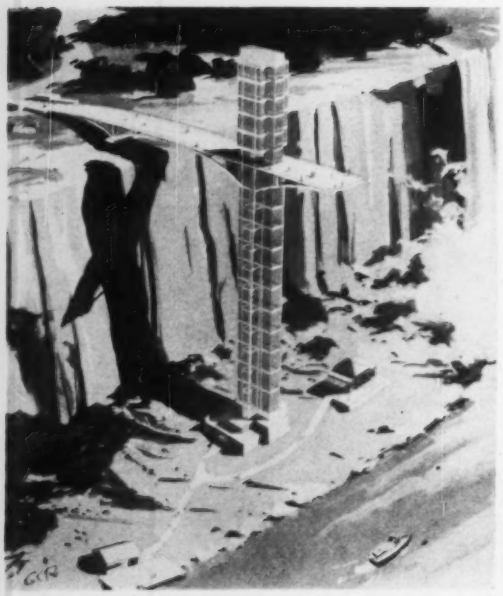


Danger? No, an Excavator Going to Work

This 6,000 ton excavating machine looks like a threatening monster hanging over the heads of children at Duerwiss, Germany. But the dredger was just moving slowly under its own power to a new construction site, after two years at one spot.

Big Brother Meets Little Sister

The 55 cu yd River Queen hovers over its baby sister, the 3⅛ cu yd 11-B, at a strip mine in Kentucky. The River Queen is a stripping shovel, 1650-B. It weighs 4.9 million lb, has 145 ft of boom, a cutting radius of 158 ft and can lift 80 tons 106 ft into the air. It's the largest excavator made by the Bucyrus-Erie Co.



The Eyes Will Have It at Niagara

A glass-enclosed, 270 ft elevator will go into operation next year at Prospect Point, Niagara Falls, N. Y. The $800,000 tower will have six observation decks. Total capacity: 1,500 honeymooners. Five of the decks will be above the main bridge, giving a clear view of the American Falls beyond. Praeger-Kavanaugh, New York City is the designer. The new tower will replace a 51-year-old elevator shaft. It was closed this spring because rock movement below the foundation made operation unsafe.

New York Maps Anti-Slum Strategy

Strong code, tight enforcement seen as vital weapons in fighting housing blight, two-year study shows

A New York State agency last week released a report that may show communities across the nation how to cope with the problem of deteriorating housing and blighted residential areas.

The report is based on a two-year study of housing and code enforcement problems in the more highly urbanized areas of the state (excluding New York City). It includes a practical program of action for housing conservation and rehabilitation, which communities can adopt quickly and without massive financial investment. Key item in the plan is the adoption of a model housing code.

The $95,000 study was jointly sponsored and financed by the New York State Division of Housing and the federal Housing and Home Finance Agency for the purpose of advancing urban and housing renewal.

The investigation and the report were divided into three major phases: collection of information on existing building conditions and housing regulations; drafting of a model housing code applicable to any type community; and compilation of an administrative guide for code enforcement.

1. The Problem

Less than 500 of New York's 1,600 cities, towns and villages report building-permit statistics. Less than two-thirds inspect new construction to make certain of structural and fire safety and sanitation, the report reveals.

There are few regulations applicable to existing housing, and almost no enforcement of regulations is undertaken, except in response to complaints. Of the 43 communities surveyed with less than 50,000 population, 27 had no regulations whatever governing the maintenance of housing; 30 others had no regulations requiring basic facilities such as toilets, bathing facilities or even water supply. Another 24 had no regulations pertaining to sewage disposal other than those contained in the sanitary code.

Small communities generally cannot afford to employ full-time technical personnel to maintain housing standards.

The report says, "The inspector in the typical building department of a small city, who is often a part-time employee, handles the zoning ordinance, building code and the Multiple Residence Law. Provision for secretarial help is an unheard of luxury. . . . If there is any significant volume of new construction, it is manifestly impossible for one building inspector to make all the required inspections and handle all the paper work."

Larger communities may have housing programs. But frequently they are handicapped by lack of coordination among municipal agencies, and available manpower resources are spread too thin in costly decentralization.

Another problem of small communities, especially, is an aging house inventory. Nearly 44% of the urban and nonfarm housing in the state (excluding New York City) was constructed before 1919. Bulk of the newer housing has been built in the suburbs, while older neighborhoods have been bypassed, accelerating the spread of slums and blight.

"Demolition and redevelopment are too expensive and time consuming to provide more than a partial answer to the vast problem of slums and blight," reads the report. "Rehabilitation and conservation is essential to the maintenance of the housing inventory."

2. Establishing a Code

The Minimum Housing Standards Ordinance developed by the study group is recommended with minor modifications, for any area in New York State. It includes the following provisions:

- **Exterior property areas**—Sets safety and sanitary standards for yards and auxiliary buildings.
- **Exterior structure**—Spells out the minimum essentials for safe and weatherproof structures.
- **Interior structure**—Provides minimums for adequate dwelling interiors based on considerations of health and safety.
- **Basic facilities**—Defines standards for water supply, plumbing fixtures, heating equipment and other fundamentals.
- **Installation and maintenance**—Regulates the installation and maintenance of required equipment and facilities.
- **Occupancy**—Creates norms for minimum space per occupant based on principles of health and safety.
- **Light and ventilation**—Establishes minimum requirements based on principles of health and safety.
- **Responsibilities**—Defines basic responsibilities of owners and occupants.

The housing report adds that supporting codes and ordinances—zoning ordinances, building, plumbing, fire, electrical and sanitary codes—should be adopted along with the housing code in order to obtain optimum results.

3. Enforcing the Code

The administrative guide accompanying the model housing code is based on concepts that have been successfully used in municipalities in and out of the state. Here are some of the points highlighted for effective code enforcement and regulation:

- **Planning**—An agency should be established to determine what areas will be designated for redevelopment, rehabilitation and conservation. In most municipalities, sections of bad housing are relatively concentrated. Areas that require intensive enforcement can be identified and schedules developed according to need.
- **Inspection**—The code should be enforced by a system of inspection and correction of violations and the report describes how such a system can operate. The significance of periodic inspection, maintenance of adequate records regarding violations and a quasi-judicial approach to conducting hearings on enforcement problems are emphasized.
- **Personnel**—Enforcement agencies should be adequately staffed and top-notch personnel are a must. Small communities can pool personnel.
- **Coordination**—An effective code enforcement program depends on coordination with related agencies and programs (health, public works, fire). It depends also on the cooperation of planners in selection and scheduling of necessary capital improvements.
- **Public relations**—A high degree of citizen understanding and participation is required. The objectives of the housing code can be more readily accomplished by persuasion and education than solely by legal compulsion.

Four methods of approach for more effective state assistance in rehabilitation and conservation programs are also recommended. They are: closer coordination of state and local programs and pooling of resources; development of additional mandatory building and housing standards to supplement existing regulations; technical aid by the state to local communities on a contractual basis; and state provision of funds to communities based on the type and scope of local program.

The report and its recommendations were transmitted to New York's Governor Averell Harriman. Copies of the three-volume study, "Housing Codes, the Key to Housing Conservation," can be obtained from Schuyler Patterson, New York State Division of Housing, 270 Broadway, New York, N. Y.

Suez Award Holds Surprises

The award of an $18 million contract to an American joint venture for dredging Egypt's Suez Canal was occasion for eyebrow raising.

In view of the Middle East turbulence, it hardly seemed likely President Nasser's nationalized Suez Canal Authority would do business with an American firm on the latter's terms: Payment of 70% in hard currency, the remainder in Egyptian currency. It had been Egypt's declared policy to let contracts only to firms that did not insist on being paid in hard currencies, which virtually eliminated Western construction firms.

The second surprise was that the American joint venture beat out eight European competitors whose equipment was much closer to the job. A clever bit of construction planning apparently did the trick on this score. The American contractors planned to work in between ship movements through the canal.

Two-thirds of the 103 mile sea-level waterway will be deepened and widened under the contract. Hawaiian Dredging and Construction Co., Honolulu, sponsored the successful joint venture. Other members are Standard Dredging Corp. and Atlantic Gulf & Pacific Dredging Co., both of New York City.

The Suez venturers plan to spot dredges in widened parts of the canal to keep them clear of ship traffic. The cutters will be swung into the main channel after a ship passes, making the most of the six minute interval between ships.

This way the Americans figure they can work an 18-hour day: 11 hours when ships are not using the canal, plus 7 hours during the 13 hours of each day when ships are moving.

European bidders apparently assumed they couldn't work while ships passed through the channel, limiting the work day to 11 hours.

Three ocean-going hydraulic dredges are already on the way to the work site. They are traveling from Honolulu, Tampa, Fla., and Galveston, Tex. All pipe and required equipment will be U.S.-made.

About 40 million cu yd of mud and sand will be removed during this first of three stages of $250 million modernization program. The American team will deepen the canal from 34 to 37 ft from Port Said to Great Bitter Lake to the south. The canal will also be widened to 300 ft from the present 200 ft. Later, the canal will be deepened to 40 ft.

In contrast to the Americans' modern hydraulic equipment, an Egyptian subcontractor will use the same methods employed in building the pyramids to spoil canal excavation. Thousands of laborers will hand-carry the excavated material from the canal banks into the desert to be dumped.

A Belgian dredging firm has the contract for the canal section from Great Bitter Lake to the Suez Gulf.

Hardboard house going up . . .

NAHB Plans New Test Homes

Work starts next week in Knoxville, Tenn., on the first house in a new National Association of Home Builders series designed to test uses of basic building materials in homes. Various materials manufacturers will cosponsor the houses with NAHB's Research Institute.

Cosponsor with NAHB in building the Knoxville house is the Masonite Corp., of Chicago. Hardboard will be the principal structural material used in the building. Future houses in the series will test aluminum, concrete and concrete masonry, gypsum, plastics, plywood, steel, structural clay products and wood. Innovations in these test houses will be the kind that builders can adopt in the next few years, rather than more futuristic types not practical for use right away.

The structure will be a one-story, six-room house with 1,050 sq ft of living space. Unusual features besides its hardboard exterior will include plastic plumbing pipes and a prefabricated wiring system, called a "wiring tree," to serve major appliances.

Work on the Knoxville house gets under way only a week after the start of another NAHB-sponsored test house, not connected with the new series. Concrete placement was scheduled this week for the earlier project, a six-room, one-story house in South Bend, Ind. It will be walled with sandwich panels having a foamed plastic core (ENR July 24, p. 19). Outside face of the panels will be redwood on the 1,200 sq ft South Bend house. The core of expanded polystyrene will be used between the redwood and the interior finish both for insulation and structural properties.

Consulting architect on the Knoxville house is Painter, Weeks & McCarty. Martin L. Bartling will build it. On the South Bend house, Herman L. York is consulting architect and Andrew S. Place the builder.

Property Owners Must Pay Cost of Lateral Sewers

The Kentucky Court of Appeals has decided that Louisville's Metropolitan Sewer District may charge the costs of extending lateral sewers to property owners who benefit from the change. The court also ruled that liens for the improvements are superior to all other claims against the property, except for taxes.

The ruling enables the city to extend sewers to nearly all Louisville homes that don't have them now (about 5,200).

The rulings came after a test suit brought against MSD by the Kentucky Trust Co., holder of a mortgage on property to be assessed. The trust company questioned whether the sewer lien could take precedence over the mortgage; it argued that the sewer cost could not be considered a tax.

The court agreed that special assessments for local improvements aren't taxes in the ordinary sense. But it said public interest made this type of claim superior to all others.

The new program calls for trunk lines to be installed at the city's expense, with property owners paying for the laterals.

Utility Appeals City Ban On Overhead Power Lines

Construction men in Ohio are watching a city-electric utility battle over where to put new high voltage lines—overhead or underground. The question of whether an Ohio municipality has the power to ban overhead lines is expected to be decided by the State Supreme Court.

The figures being used in the fight between the City of Euclid and Cleveland Electric Illuminating Co. indicate construction's stake in the matter. The utility says its proposed overhead line on 80-ft-plus towers will cost $10.31 per ft, exclusive of right-of-way. Its estimated cost of an underground line is $55.95 per ft.

The battle began in March 1957, when the Euclid City Council enacted a measure requiring all power lines in excess of 33,000 volts to be installed underground. In June, the council turned down the utility's request for a permit to string 132,000 volt wires across suburban Euclid.

The utility brought suit, saying the statute was unreasonable and unconstitutional. Last week a special commissioner of the State Court of Appeals upheld the utility in a report to the court. Most arguments raised by the city were overruled.

If the court adopts the report, the city will appeal to the State Supreme Court.

U.S. Proposes Do-It-Yourself Shelters

The federal government came up last week with an ambitious atomic fallout shelter program to replace the hopelessly expensive task of building bomb shelters for everybody at government expense.

Leo A. Hoegh, chairman of the Office of Defense and Civilian Mobilization, outlined a five-part campaign to the Senate Appropriations Committee to support his request for $29 million, to finance the program. It would include:

- Surveying existing structures to determine their ability to provide fallout shelter.
- Accelerating research on ways to build fallout protection into existing and new structures.
- Constructing a limited number of prototype shelters of various kinds for different regions and climates.
- Incorporating fallout shelters in new federal buildings.
- Informing the public of the fallout hazard and of ways to counter it.

Public information would be disseminated through the Department of Health, Education and Welfare. The task would involve convincing designers and builders that fallout shelters are necessary and selling the public on paying the extra cost involved.

The survey of existing buildings would include such facilities as mines, subways, tunnels and cyclone cellars—many of which already are capable of affording fallout protection.

In the research program, "designs of shelters will be perfected to assure the most economic and effective types," Chairman Hoegh says. "We will work with the architectural and engineering schools of this country in order to develop a broad knowledge of design requirements in shelter construction."

Prototype shelters financed by the government would be part of structures built primarily for peacetime uses—underground garages, subways, schools, hospitals and maintenance facilities for the federal highway program. The federal government would pay only the extra costs involved in making the buildings suitable for fallout shelters. One of the prototypes would be built in each state.

A spokesman for Mr. Hoegh's agency says the federal government spends an average of $300 million per year for new buildings. Experts estimate fallout shelters can be built into the structures for no more than 2% extra cost.

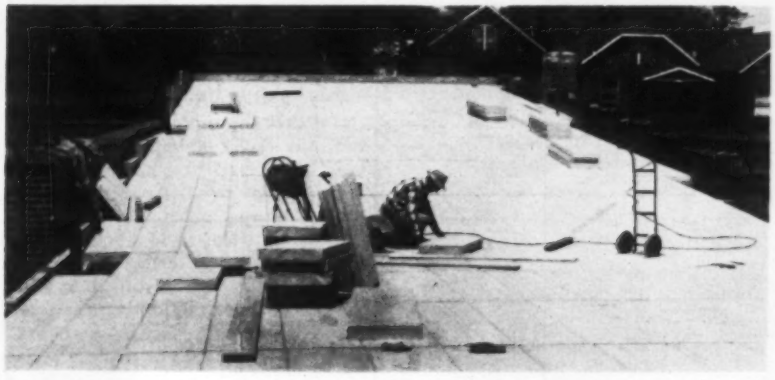
"The important thing to recognize is that this program involves building no shelters as such," says a civil defense official. "Every shelter would be a useful part of the structure in peacetime. And the program will not involve a lot of federal spending."

The official points out that many buildings and homes already offer considerable protection from fallout. He says radiation can be cut to 1/5,000th of its strength by: 36 in. of earth, 24 in. of concrete, 7½ in. of steel or 3 in. of lead.

To remove radioactive particles from air in a shelter, a filter and pump are prescribed. The pump should be operable by either electricity or hand. "Any commercial standard filter in an air conditioner will remove the fallout," says the ODCM spokesman.

Success of the project, which could mean many millions of dollars in construction work every year, depends on how seriously the Eisenhower Administration itself takes the program. The civil defense agency so far has been unable to get Congressional support for a big shelter-building program. For one thing, the cost would be astronomical. Equally important, there has been considerable disagreement over whether the best protection against atomic attack is shelters or evacuation.

The Administration acknowledged last May that no shelter can be relied on for protection against blast and heat of a hydrogen bomb. However, Mr. Hoegh believes, "Fallout shelters offer the best single nonmilitary defense measures for the protection of the greatest number of people."



Foamed Concrete Plant Speeds Roof Job

Irregular building outlines might be a headache to some people, but they netted a roof deck contract in St. Louis for a manufacturer of foamed concrete plank.

About half the 9,700 sq ft of roof decking required for Mountain Valley Water Co.'s new bottling works annex had to be shaped to conform to the building's irregular plan. The comparative ease and speed with which foamed concrete can be sawed on the job gave the material a winning advantage.

The contractor used 3½ in. thick precast planks, 80 in. long by 20 in. wide. Density of the material is 34 lb per cu ft—about the same as wood.

Three men unloaded and hoisted the plank and three more installed it. The in-place cost, was $1.30 per sq ft, including precast concrete roof girders and joists and a coat of tar on top of the plank. The planks alone, not counting erection, cost 50 to 55 cents per sq ft.

Martin E. Galt, Jr., St. Louis, was the general contractor. The plank, known as Calsi-crete, was supplied by Continental Materials Corp., Chicago.

Seattle Decides to Repair "Glory Hole" Sewer Break

City of Seattle expects to call bids soon to repair the deep 72 in. sewer over which a mammoth cave-in occurred last fall (ENR Dec. 19, 1957, p. 26).

A final inspection convinced City Engineer Roy Morse and other members of the Board of Public Works that the repair project is feasible. Alternative would be construction of an expensive bypass around the area where the break occurred, creating a hole 150 ft deep.

The repair plan will call for the installation of steel liner one to two inches smaller in diameter than the sewer for a distance of 3,000 ft. Concrete grout will be pumped between the new liner and the old brick lining.

The sewer is in "good to very good condition" except where it collapsed and was closed with a big plug of concrete. Repairs will cost an estimated $500,000, in addition to the $700,000 already spent.

FNMA Gets Some More Funds

The $1 billion emergency program to pump up housing starts by government purchase of mortgages is moving at a rapid clip.

Another $150 million of authority to buy mortgages of low-cost houses at par was given the Federal National Mortgage Association last week. Only $250 million of the Congressional authorization is left to turn over to Fannie Mae. At the present rate of demand, Fannie Mae will have committed this latest $150 million in three or four weeks.

Fannie Mae had committed itself to purchase 45,092 mortgages totaling $537.2 million, as of July 24. Another 21,073 worth $242.5 million were insured by the Federal Housing Administration; and 24,019 worth $294.6 million were mortgages guaranteed by the Veterans Administration.

The program was enacted to get housing starts moving upward as an anti-recession move. Whether Fannie Mae actually purchases the mortgages will depend on the trend of the money market. Higher interest rates make FHA mortgages more attractive to investors than VA mortgages. But VA loans are more popular with low-income home buyers because of no downpayments and lower interest rates. Hence, it's expected that Fannie Mae will wind up buying many more VA than FHA mortgages; that will certainly be so if the money market should get tighter and interest rates go up.

The average mortgage being committed runs about $12,000. States where Fannie Mae commitments are heaviest are: Texas, 7,129; Michigan, 4,569; California, 3,934; Florida, 3,149. Some states have not been heard from at all: Vermont, New Hampshire, Maine, Massachusetts, Rhode Island.

Up to last week, Fannie Mae had actually purchased only 16 mortgages, worth $186,000. That's because the program has not been active long enough for houses eligible for commitments to be sold, which is when the investor offers the paper to Fannie Mae, if he wants to.

Canal Juggling in Full Swing

This photo of Wilson Lock downstream canal work at the 75% completion mark shows how the complex construction plan is working. A 100 ft lift chamber is being built through existing Wilson Dam on the Tennessee River by the Tennessee Valley Authority (ENR Apr. 10, p. 40). Dry channel beginning in foreground and curving toward shore will be new sailing route for river tows. Narrow channel to right of dry channel is temporary route during construction. Old alignment began at 10 ft lock (lower left) and ran in dry channel now being deepened; this lock and two lifts totaling 90 ft at dam will be replaced by the new lock. Construction is by TVA crews and a contractor.

New Port Projects Start In Two New Jersey Cities

Work has begun on a new Elizabeth, N. J. shipping channel. Some 14 million cu yd will be dredged in the Bound Creek area between Elizabeth and Newark.

The new channel will be 9,000 ft long, from 600 to 800 ft wide and 35 ft deep. It will parallel the existing Port Newark Channel. The existing channel will be extended 1,850 ft south to meet the new channel.

Dredging of the channels is the first step in the development by the Port of New York Authority of a new marine terminal at Elizabeth that will cover 703 acres and contain 24 vessel berths.

Port Newark also will add 11 new vessel berths. This will raise the port's facilities to 39 berths and will result in the development of an additional 115 acres of land. Cost of the proposed work will be $125 million, making a grand total of $275 million invested by the PNYA in the Newark-Elizabeth sector of the port.

$25 Million Cement Plant Being Built in Michigan

A cement plant believed to be the largest ever constructed as a single unit is under way at Dundee, Mich. It's being built for Dundee Cement Co. at a cost of $25 million. Annual production capacity will be 5 million bbl. It is scheduled for full-capacity operation in early 1960.

Ford, Bacon & Davis, Inc., New York City consulting engineering firm, reports in a feasibility study for the center firm that the supply of usable limestone and clay on company property should be adequate for "more than 100 years of operation."

The plant and quarry are on a 1,400 acre tract. A single steel storage silo is being constructed at nearby Port Monroe. This unit also is billed as the largest of its type in the world.

Priest Rapids Owner To Be Investigated

A Washington State Superior Court judge has ordered a grand jury investigation of the business operations of Grant County Public Utility District, owner of Priest Rapids Dam now being built on the Columbia River. The inquiry follows the resignation of the district's manager, Glenn Smothers.

Failure to obtain bids on equipment costing over $5,000 is one of the irregularities charged to Mr. Smothers.

Observers don't think the situation will affect continuation of the $166 million Priest Rapids job, or the planned start early next year of the district's $200 million Wanapum Dam.

DOUBLES DAILY PRODUCTION

Marcelletti & Son speeds up cast-iron pipe installation with fast-digging Cleveland

A fast-digging Cleveland 110 trencher enabled Emil Marcelletti & Son of Bedford, Ohio to make the most of the speedy pipe-laying made possible by new quick-connecting, bell-and-spigot type cast-iron pipe on this water line installation in North Ridgeville, Ohio.

Marcelletti's daily production, before putting the Cleveland on the job, had been limited because the backhoe method he was using didn't open trench fast enough to stay ahead of the swift moving pipe-laying operation. The 110 quickly doubled his daily production, on some days turning out nearly 3 times the trench footage he had been getting.

"The 110's high, reliable production and its ability to get by obstructions in narrow quarters really paid off for us on this job," says Jim Marcelletti, secretary-treasurer of the firm. "It's quick-shifting conveyor let it dig right by hundreds of trees, poles and hydrants along the trench line, obstructions that had previously slowed up our trenching operations."

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ONLY CATERPILLAR GIVES YOU THE OIL

Here is what you should know about its money-saving and operating advantages

How much better is the exclusive Caterpillar oil clutch than the ordinary clutch? It can be summed up in this short statement:

When the Caterpillar oil clutch is ready for *adjustment*, the ordinary clutch is ready for *replacement*. Experience in the field proves it.

In the years since 1954, when Caterpillar introduced this remarkable advance in earthmover power trains, owners all over the country have reported thousands of hours of oil clutch operation free of adjustment or repair.

Typical of these reports is this one from Myron Omernik, land improvement contractor of Custer, Wis.: "Our D7 has operated 5,100 hours without any oil clutch repairs or adjustment."

This performance record means two clear-cut money-saving advantages:

1. Virtual elimination of down time caused by clutch failure.

2. Greatly reduced repair costs.

But in addition to its economy features, the oil clutch also provides superior operation. Here is why:

1. A hydraulic booster on the D9 and D8, operated by clutch oil pump pressure, takes the effort out of clutch operation but retains clutch "feel."

2. Clutch "fade" because of overheating is practically eliminated. The oil in which the clutch parts run is pumped directly from the crankcase. This means the clutch temperature never rises above engine temperature.

3. A clutch brake helps match clutch and transmission speeds—making shifting easier.

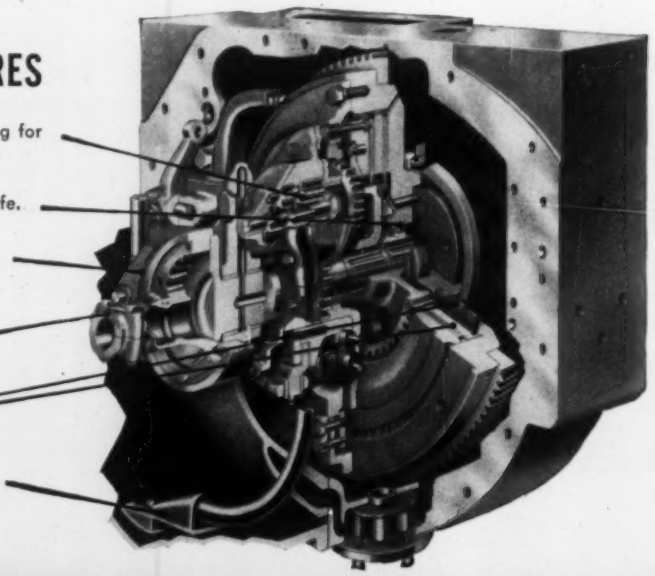
Here, in brief, is how the oil clutch works:

Three metallic-faced plates are separated by oil films at all times except for the last revolution or two as the clutch is engaged. Oil enters the inner diameters of the clutch plates and circulates between them by means of grooves in the clutch facings, carrying away heat and reducing wear. All clutch parts are constantly running in oil.

The exclusive Caterpillar oil clutch is not an "extra"—it is *standard equipment* on the D9, D8, D7 and D6 Tractors, all Traxcavators, on the No. 12 Motor Grader and on the MD6 and MD7 Pipelayers. Yet it is an "extra" in *value* that is unmatched in the industry.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

IMPORTANT OIL CLUTCH FEATURES



Independent oil pump assures positive lubrication and cooling for clutch plates, bearings and other vital moving parts.

Heavy-duty bearings have extra capacity for long service life.

Clutch brake helps match clutch and transmission speeds—makes shifting easier.

Removable coupling allows clutch to be removed without disturbing engine or transmission.

Double clutch plates are metallic-faced for heavy-duty torque transmission.

Intake screens protect the oil pump from foreign material.

CLUTCH

CAT D9 TRACTOR: "We have operated this Cat D9 Tractor for 4,000 hours in the toughest kind of work without any repairs to the oil clutch," says Frank Hill of the Silva & Hill Construction Co., Los Angeles, California. "I just wouldn't consider buying a tractor without it now."

CAT NO. 955 TRAXCAVATOR: "In over 4,000 hours on our two hard-working No. 955 Traxcavators, we have made only one simple adjustment on an oil clutch and that took only about a half hour. It's much simpler than the old friction-type clutch," says M. J. Lutz of Bethel Park, Pennsylvania.

OWNERS REPORT TROUBLE-FREE OPERATION

CAT NO. 12 MOTOR GRADER: "Our No. 12 is starting its third season without interruption due to clutch trouble." With only one clutch adjustment in over 2,000 hours, Francis Bloomer, President of the John F. Bloomer Co., Appleton, Wisconsin, says, "We like the No. 12 with the oil clutch." This company, with 35 years of road construction work, owns a fleet of Cat-built equipment consisting of No. 12s, D9, D8s, DW21s.

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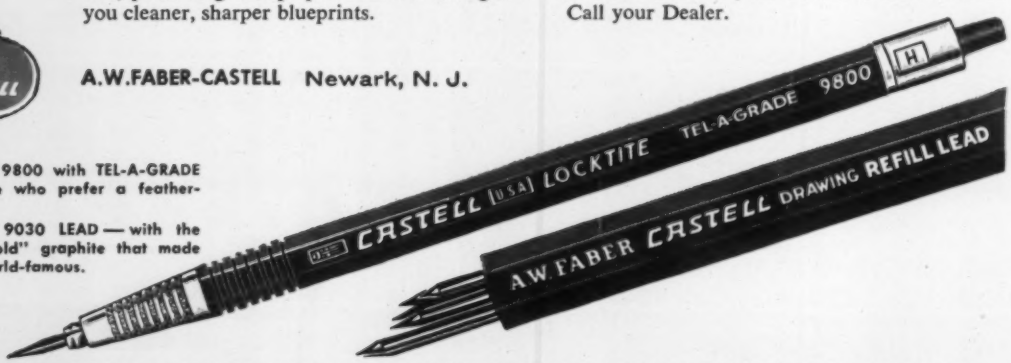

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New Bridge to Be Built Across Carquinez Strait

Construction of the Benicia-Martinez Bridge across the northern arm of Carquinez Strait in the San Francisco Bay region is scheduled to begin next April and to be completed by March 1962.

The State Director of Public Works, C. M. Gillis, reports negotiations with the federal government for rights-of-way for approach roads through the Army's Benicia Arsenal should be completed shortly. Tentative schedule calls for advertising the bridge construction work and sale of the Bridge Authority's revenue bonds in the first two months of 1959 with sale of bonds and award of contract expected to take place sometime in April.

The bridge will be parallel to and just downstream from a railroad bridge across the Carquinez Strait. It will be operated as a toll bridge to replace the state owned Benicia-Martinez Ferry.

It will be financed from part of the $80 million in revenue bonds authorized by the California legislature in 1955 to build the parallel Carquinez Bridge and approaches (ENR Feb. 13, p. 198), now approaching completion, and the Bencia-Martinez Bridge and approaches. Of the total, $46 million in bonds have been sold to cover the Carquinez Bridge project, leaving the remaining $34 million to finance the Benicia-Martinez project.

The bridge will be of the deck-truss type with a length of 6,215 ft total and overwater length of 4,880 ft. Nine piers, about 500 ft apart, will carry the structure. The bridge deck will carry a four-lane highway with a 10 ft dividing strip. It will be supported by steel girders over trusses and will be about 200 ft above the water.

Minimum clearance for ships passing under the bridge in the main channel will be 138 ft.

Ohio Special Session Unravels Bonding Knot

The Ohio legislature has averted a threat to $23 million in sewer and water line extension projects. Meeting in special session, it voted to drop a provision in a year-old law that required full "prepayment" of installation costs by the developer. Builders had balked and work was delayed.

The law stated that, outside municipal limits, half the cost of extension projects had to be paid by users. There can't be users until lines are installed and houses built, so bonds to finance the projects could not be issued (ENR April 24, p. 117).

The legislators also extended to 40 years the period over which general obligation bonds can be retired. Previously it was 25 years.

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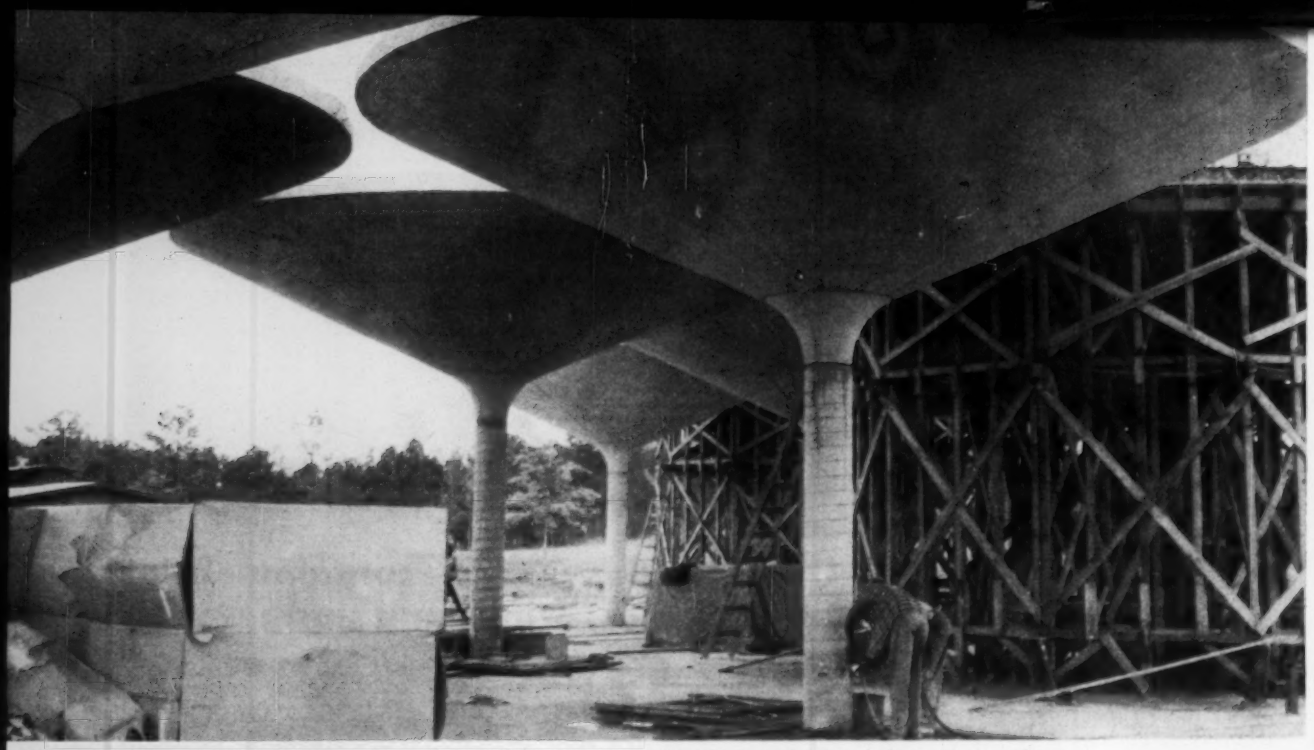
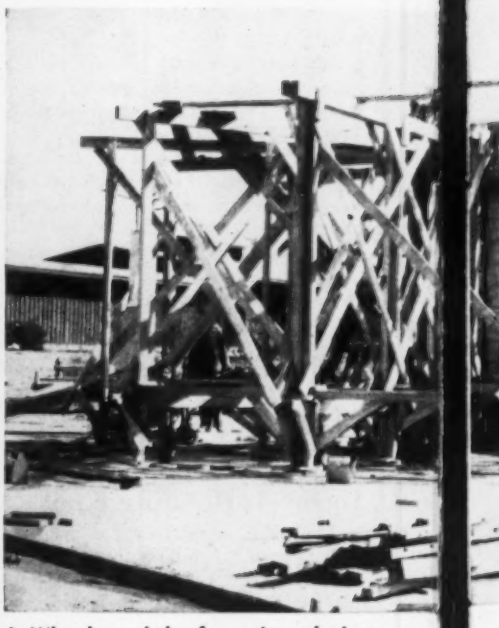


These unusual shapes form the roof for an open-air restaurant. Here's how it was done . . .

3. Falsework structure was built in place for first pour but . . .

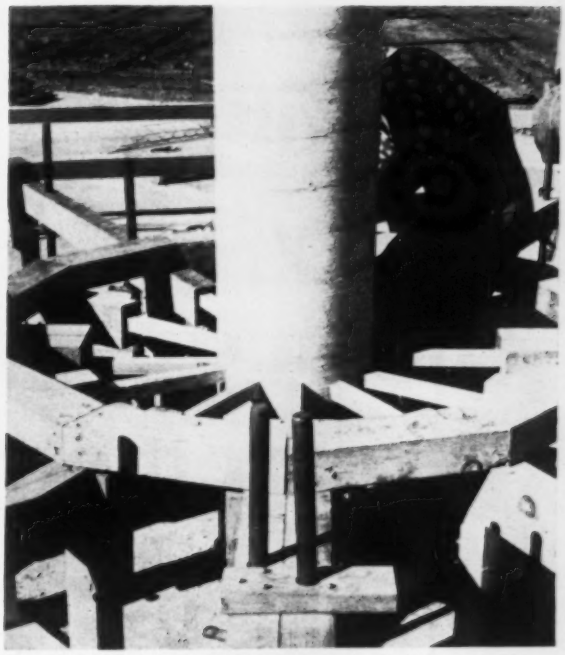


4. Wheels and the four-piece design

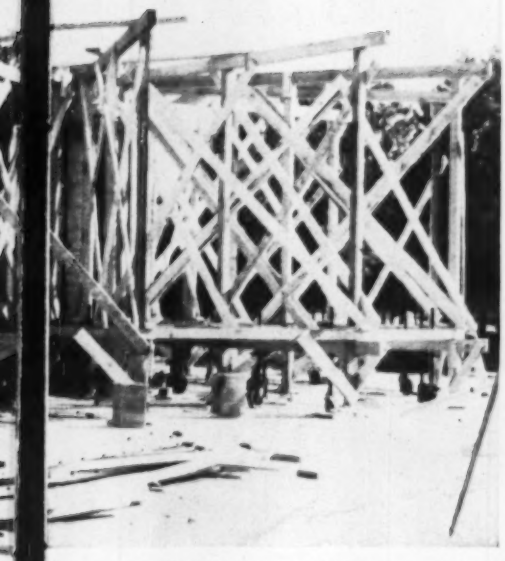
Concrete Wine Glasses Roof a New

Unorthodox forms in concrete make a striking roof for a new restaurant in Pine Mountain, Ga. A cluster of 19 elevated cones suggestive of wine glasses cover indoor cooking and comfort facilities and an open-air dining pavilion at the Ida Cason Callaway Gardens. The units are 30 ft in diameter and about 19 ft high. The roof was made continuous by concreting the space between sections. Four sets of traveling forms for the conical bowls were built and reused on a 2½ day cycle. The contractor obtained a good concrete surface without rubbing by mopping forms with neat cement grout before placing the concrete. The conical bowls range in thickness from 3 in. near the perimeter to 5 in. near the center. They are rimmed with 12x9 in. concrete beams, cast integrally with the bowls. Stems are 18 in.

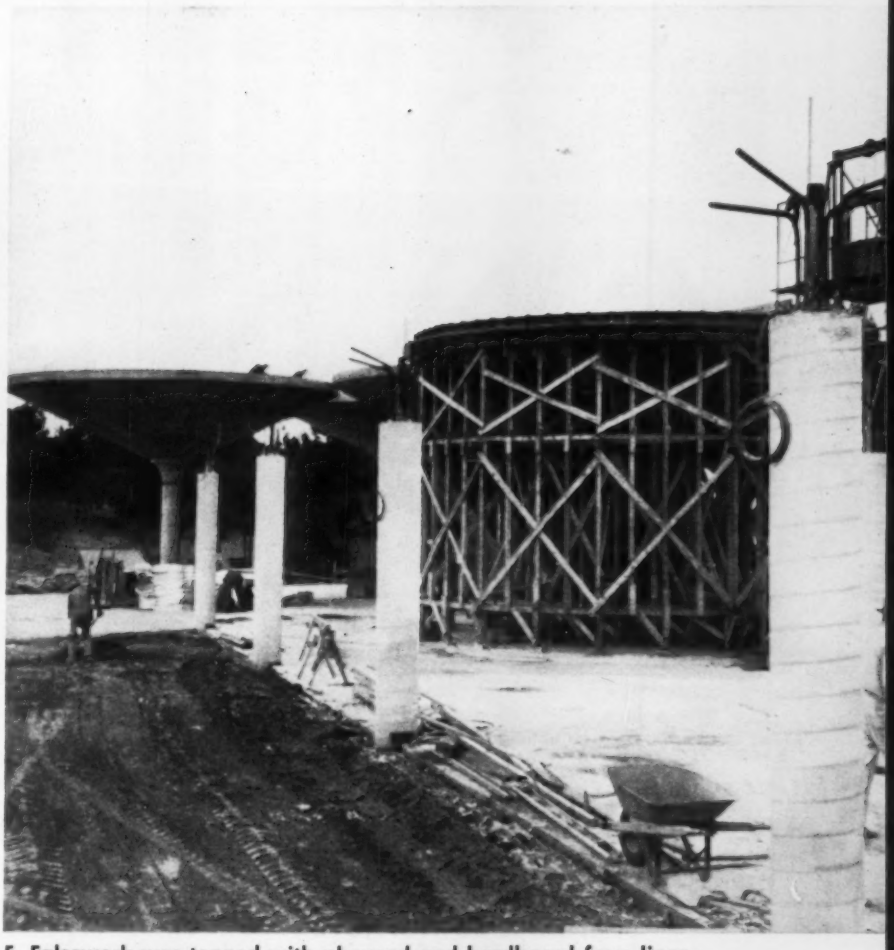
1. Paper tube forms were erected and . . .



2. Braced on all sides with falsework.



made next pour easier.



5. Falsework was topped with plywood and hardboard form liner.

Restaurant

cylinders, with a 4 in. drain pipe down the center of each. Aeck Associates, architects, designed the project. Drake, Funsten & Harrison was the structural and mechanical consultant. Beers Construction Co. built the job. All are Atlanta firms.

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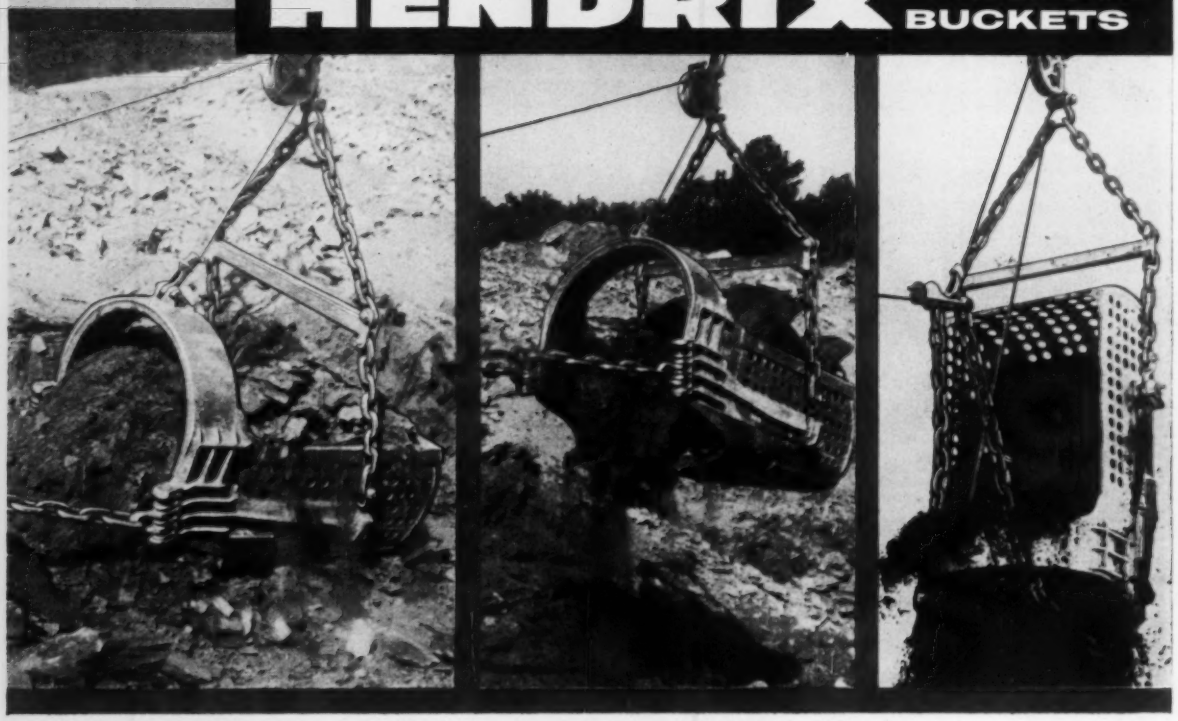

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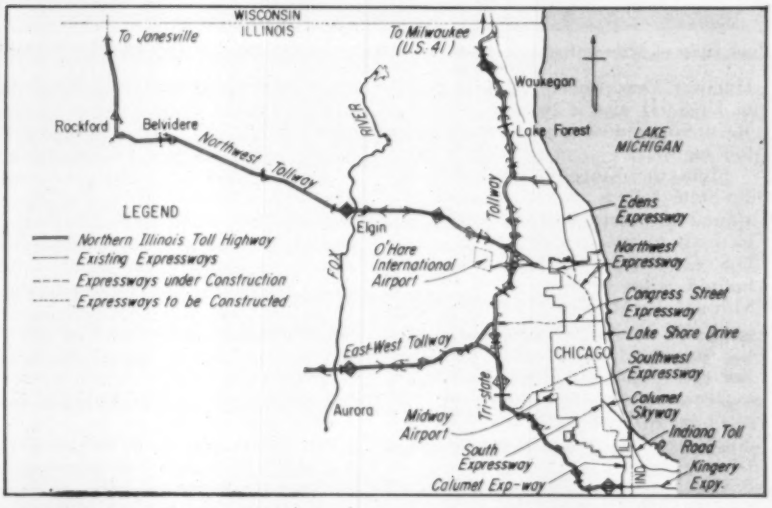
Three-level interchange will connect sections of Northern Illinois Toll Highway.

$441 Million Tollways to Open



NEW SYSTEM connects to Chicago expressways; serves northern part of Illinois.

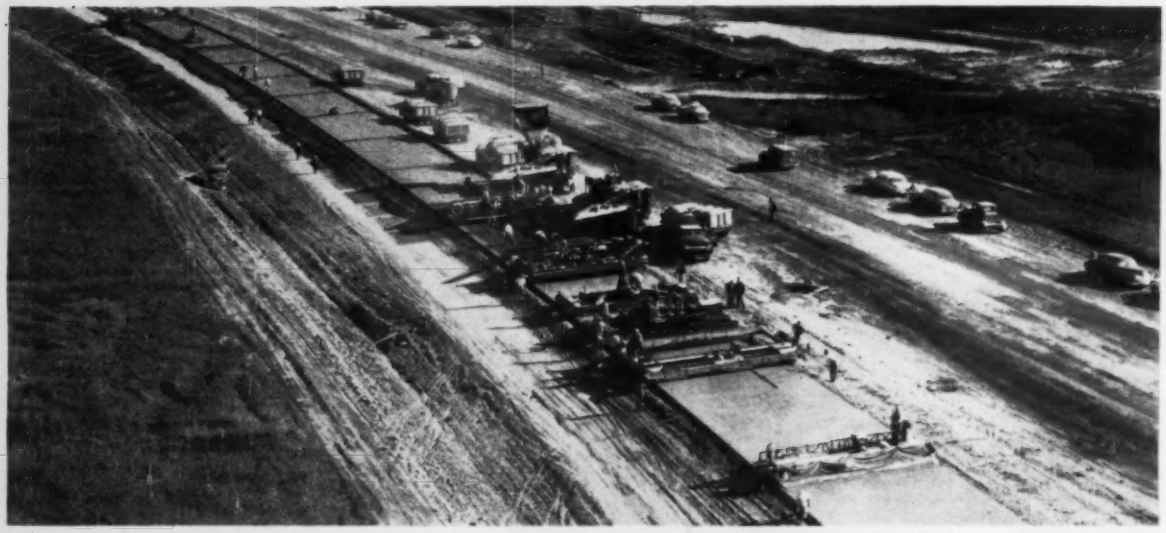
When the Illinois State Toll Highway Commission officially opens its Northwest tollway to traffic August 20, it will be a construction feat of major dimension. The 76 mile route was completed in less than 23 months after construction began.

Seven days later, an equally significant construction milestone will be reached—opening to traffic of the north 30 miles of the Tri-State tollway, only 18 months after construction was started.

The entire $441 million, 187 mile system is scheduled for completion by December 31. It may be the last major tollway that will be constructed in the U.S.

• **Three routes**—As shown on the accompanying map, the 187 mile system includes three major tollway routes—the 83 mile Tri-State, the 28 mile East-West, and the 76-mile Northwest

. . . At the peak, 20,000 workmen were employed on the new toll system



PAVING TRAINS helped speed work. This one has two pavers, two spreaders, two finishing machines, a bull float and drag.

SEVEN SPAN barrel arch bridge will carry four lanes of tollway traffic across the Fox River near Aurora, Ill.

route. The three tollways serve northern Illinois and link the metropolitan areas of Aurora, Elgin, Rockford, Milwaukee and Beloit. They are integrated with Chicago's expressway system.

Originally the system totaled 193 miles. But last year a 6½ mile stretch leading to O'Hare International Airport was released to Cook County for construction, at the County's request. This released about $33 million of the Commission's construction funds and enabled it to retire about $38 million worth of bonds last December 31.

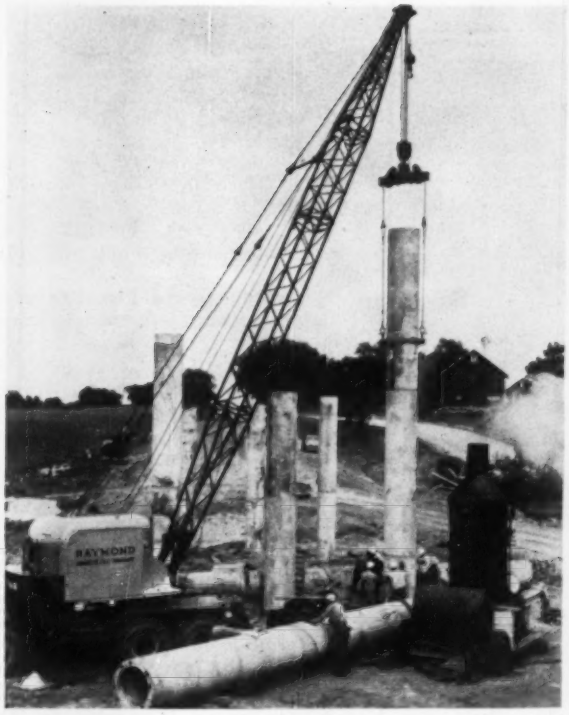
The Tri-State tollway begins on the south side of Chicago at 171st St. and Calumet Expressway with a direct interchange connection to the Kingery Expressway leading into Indiana. A connecting link with Indiana's east-west toll road is being planned by the State Highway Department. A short stretch of U. S. 41 also is to be improved as an interim connection between the two toll highways.

From the Kingery interchange, the Tri-State tollway extends through and around the metropolitan Chicago area to the state line. It connects there with U.S. 41, which is being improved as a limited access highway all the way to Milwaukee. At the Cook-Lake County line, the Tri-State will connect with the six-lane divided, controlled access Edens Expressway. This will provide a high-speed route from downtown Chicago to Milwaukee, when Chicago's Northwest Expressway is completed in 1960.

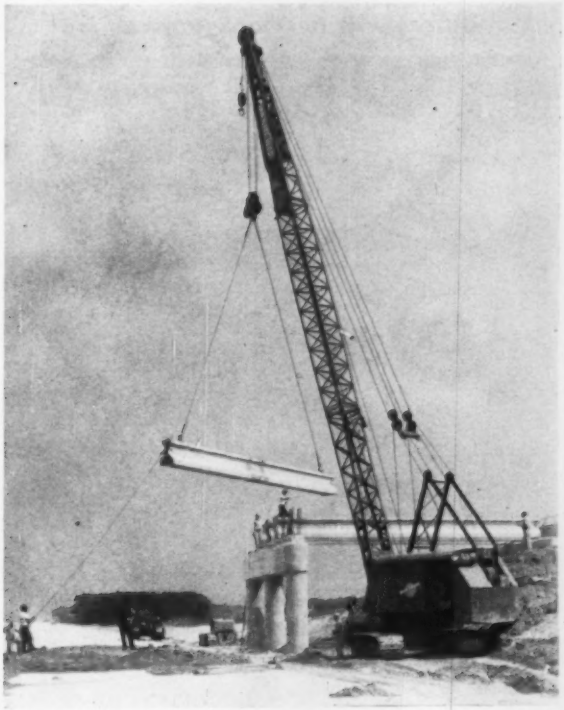
The Northwest tollway will connect directly with Chicago's Northwest Expressway. It passes near Elgin, Belvidere and Rockford, then turns due north to South Beloit, where it connects with U.S. 51 leading to Janesville, Madison and northern Wisconsin.

The East-West Tollway is an extension of the Congress Street Expressway. It will carry traffic between Chicago and Aurora, with a direct connection to U.S. Highway 30 for traffic moving across Illinois.

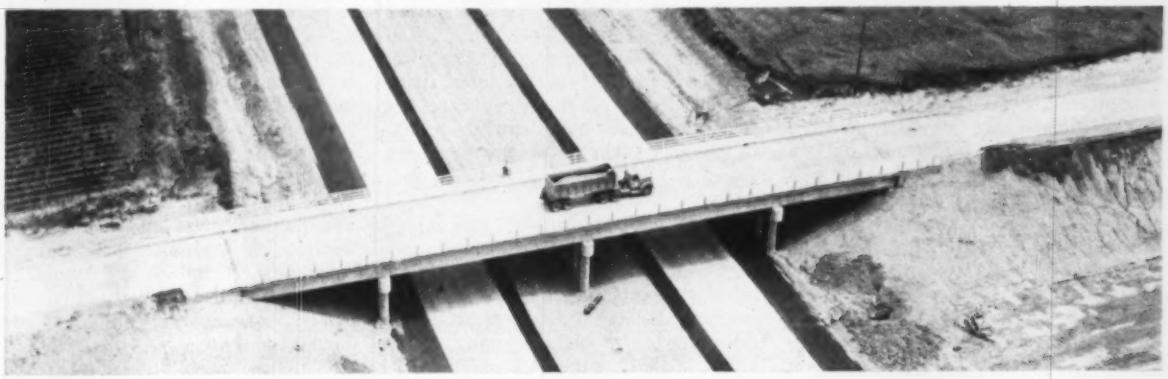
• **Construction timetable**—The Illinois toll highway system moved out of the planning stage and became a construction reality at ground-breaking ceremonies east of Rockford on Sept. 22, 1956. (ENR, Oct. 4, 1956, p. 28). In less than 10 months, construction of the first concrete roadway pavement got underway. By the end of this year, the Toll Highway Commission will



CYLINDER PILES of prestressed, precast concrete saved time and money in bridge construction.



PRESTRESSED CONCRETE girder goes in place between bridge abutment and pier of capped cylinder piles.



FOUR-SPAN BRIDGE carrys local traffic over tollway pavements, bituminous shoulders. Tollway has 265 bridges.

have started and completed 187 miles of modern expressway in 28 months.

Construction was increased to such a fast tempo during 1957 that by the end of the year 55 million cu yd of excavation and embankment had been completed and nearly 60 miles of four-lane and six-lane roadway pavement was finished. Biggest single month, last year was October when $25 million worth of construction was completed. About 11 million cu yd of earth was moved that month. Daily production reaching the staggering figure of 600,000 cu yd. Total production of prestressed concrete bridge girders reached nearly 16,000 lin ft per week.

By July 1 of this year all major construction contracts on the entire 187 mile system had been awarded—total cost was about $284 million. At that time less than 5% of the 74 million cu yd of excavation and embankment in the project was unfinished; over one-half of the 265 bridges were up; and 100 miles of roadway pavement was in place.

During peak operations this summer an estimated 20,000 workers were engaged in constructing the three tollways.

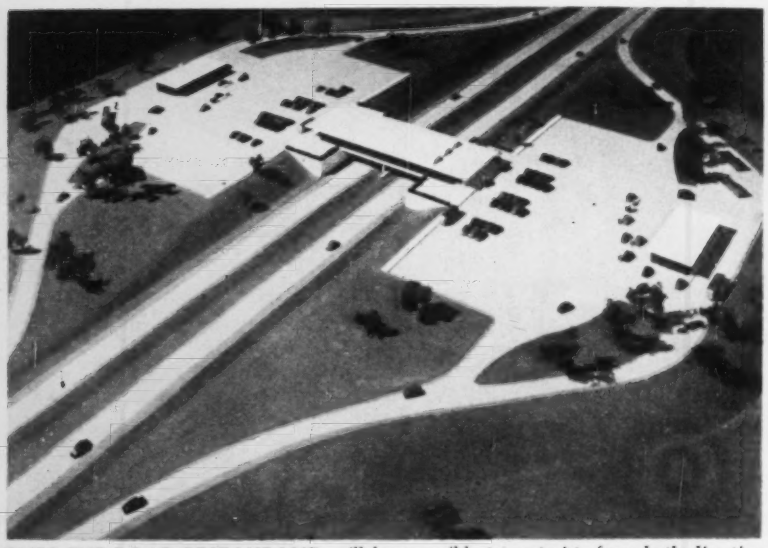
• **Design features**—Roadway pavements are 10 in. thick portland cement concrete, reinforced with welded wire fabric. They are separated by a 54 ft wide median. Shoulders are asphaltic concrete, 11 ft wide along the outside and 4 to 5 ft wide on the inside.

The 30 miles of six-lane divided tollways located in urban areas of greatest traffic densities on the Tri-State route, have 37 ft wide roadway pavements. The 157 miles of four-lane tollways have 25 ft pavements. The pavements are supported on a 4 in. layer of granular subbase and 10 in. of high-density selected sub-base. Tollways are designed for a maximum safe driving speed of 70 mph; a minimum speed of 40 mph has been established.

• **Bridges and structures**—Carrying the tollways over the many railroads around Chicago was complicated. Forty-two overheads will carry toll traffic over the tracks of 15 different railroads. The largest overhead cost $7.5 million.

In the entire system there are 216 bridges using prestressed concrete girders, 46 using structural steel and 3 using a combination of both. In all, the structures will use 6,900 prestressed

. . . Diners will overlook tollway traffic



OVER-THE-ROAD-RESTAURANT will be accessible to motorists from both directions.

concrete girders and 43,000 tons of structural steel. The bridge roadway slabs will be 7.5 in. thick cast-in-place reinforced concrete, 34.5 ft wide on the four lane tollways and 46.5 wide on the six lane sections. The prestressed concrete girders range in length up to 90 ft. and weigh up to 45 tons. They were cast and pre-tensioned in 600 ft long casting beds, on an assembly line production schedule.

The girders were moved from their casting beds to the bridge sites on specially equipped tractors—one at each end of a girder. For safety, deliveries were made only on week days, during daylight hours. At the sites they were hoisted into place atop the piers by long-boom cranes.

• **Two tri-levels**—One of the most intricate structures in the entire program is a three-level interchange that will handle traffic to and from the Tri-State tollway, the Northwest tollway, the Northwest Expressway, and O'Hare Airport. A second three-level interchange is at the intersection of the East-West and the Tri-State tollways. Both tri-level interchanges were designed to reduce the right-of-way costs, which sold at a premium at both locations.

Near Aurora the East-West tollway crosses the Fox River on an unusual thin concrete barrel arch bridge. The 1,640 ft long four-lane structure will have seven arch spans, each 175 ft long and only 14 in. thick.

One factor in the decision to use prestressed concrete in the 219 bridges was the scarcity and slow delivery of structural steel in the early stages of the program. A contract for $155,000 was awarded in May 1956 for construction of a 226 ft long, four-span prestressed concrete test bridge, which served as a prototype for the others (ENR, May 3, 1956, p. 17).

At that time preliminary cost estimates indicated that considerable savings could come by designing the bridges in prestressed concrete instead of structural steel or reinforced cast-in-place concrete. However, comparative contract costs of the three types of structures were not definitely established since alternate designs were not prepared for securing original contract offers.

• **Pile-column piers**—Considerable savings were made in both construction time and costs by using precast, prestressed hollow, cylindrical concrete piles for bridge piers columns. They are 36 in. OD, with 4½ in. wall thickness. They are driven to the required penetration and resistance, and capped with a precast concrete beam that carries the bridge superstructure.

This pile-column foundation was estimated to be about one-third cheaper than conventional pile, pile-cap and column construction.

In 94 of the concrete bridges, involving 1,100 pile-columns totaling 50,000 lin ft, installation techniques were improved as construction progressed. Final cost of the work was 20% less than the contract amount.

Pile-columns in the bridges vary in length from 20 ft to 90 ft and range from 9 to 119 per bridge. They were normally handled by 35-ton and 45-ton cranes and driven with powerful hammers. One typical rig was a No. 3/0 single-acting hammer with a 12,500 lb ram and a rated energy capacity of 40,600 ft lb.

• **Pile driving**—Cylindrical pile columns were installed by several methods. They were driven with the hammer alone at some locations. At others, the hammer was assisted by water jets. Where stiff clay was encountered, an undersize hole was drilled to a depth less than final penetration, before driving with the hammer. Occasionally, where the hole wouldn't stay open, due to unstable sand strata, an oversized hole was drilled and cased.

Where the pile could be founded on rock, an oversize hole was drilled to rock, the rock cleaned off, and the pile set in a concrete pad. Under some conditions good point bearings or sufficient friction bearings could not be developed, except at considerable depth. There it was possible to develop the required bearing by drilling and belling the hole as necessary, then filling the belled area with concrete.

• **Two bond issues**—Funds for the construction of the toll road system were obtained through two revenue bond issues. The bonds will be retired with funds received from toll charges, which will average about two cents a mile for passenger cars.

The first bond sale, totaling $415 million worth of 3¾% bonds, was completed in January 1956. This permitted the start of field surveys, designs and right-of-way acquisition. Funds received from the sale, however, were insufficient to complete the project—due largely to increased costs.

A second sale totaling $64 million worth of 4¼%, 40-year bonds was completed last April. Of this amount, $38.7 million was allocated for construction; $11.5 million for contingency reserve; $11.1 million for funded interest on both bond issues through July 1, 1960; and $2.7 million as bond discount and financing costs.

• **Increased costs**—The $85 million increase in project cost over the original estimate made in the Civil Engineering Report of Aug. 15, 1955 stems from three major items: They are right-of-way, construction and engineering.

Right-of-way was originally estimated to cost $43 million—it will cost about $56 million. The largest increase is in construction, which will cost about $283 million—compared with the original estimate of $219 million. Engineering costs have increased from an estimated $19 million to about $25 million.

Most of the increase in costs is in the Tri-State tollway. It will cost $69 million more than originally estimated. The East-West route will cost $10 million more and the Northwest tollway, $5 million more.

The sharpest increases in the contract construction costs came in April 1957 in bids for two sections of the Tri-State.

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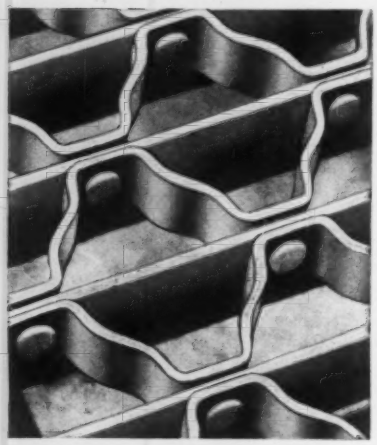

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. . . Two methods of toll collection will be used

route. Low bids submitted for major contract items on these and other sections of the Tri-State tollway in Cook County exceeded estimated costs by 11% to 160%, the Toll Highway commission reports.

The sharpest increase was 160%, for crushed stone base. The smallest was 11%, for reinforcing steel. Other increases over 1955 cost estimates included: granular subbase, 106%; selected subgrade, 90%; structural steel, 77%; borrow material, 71%; unclassified excavation, 42%; concrete pavement, 36%; and structure concrete, 13%.

• **Service areas**—There will be five service areas, complete with restaurants and service stations. One unique feature is construction of restaurants above the tollways.

These "over-the-tollway" restaurants offer certain advantages over the dual restaurant facilities normally provided on turnpikes and toll highways, the designers believe.

They're more economical because, only one structure is required, with one set of operating facilities, and only one staff of three shifts per day. Moreover, an estimated 3% increase in revenue is expected because restaurant patrons can watch traffic below.

Three of the service areas are located on the Tri-State; one near Hinsdale, one near Franklin Park, and one west of Lake Forest. The other two are located on the Northwest Tollway, near Belvidere and north of O'Hare Airport.

• **Toll collections**—There will be two methods of toll collections. On the Northwest route west of Fox River, the conventional ticket system will be used. The driver gets a ticket when he enters the tollway and keeps it until he pays the toll when leaving the route.

The barrier type will be used east of Fox River. It was the logical choice since Chicago's major traffic routes fan out from the Loop along radial lines, intersecting the Tri-State Route about every four miles. Consequently, it would be highly impractical and uneconomical to have toll collecting facilities manned at each of these intersections.

Entrance and egress to the tollway system east of Fox River will be without interruption. But as a vehicle moves along it will be stopped at the barrier stages where fixed tolls will be collected. Of the 158 lanes of 22 toll plazas, 23 will be operated with automatic toll-collection equipment.

• **Toll charges**—The official schedule of toll charges, adopted last month, ranges from about two cents a mile for passenger cars to six cents for vehicles with five or more axles.

Typical toll charges for a passenger car are $1.35 from Chicago to Beloit on the 76-mile Northwest tollway; $1.80 for the entire 83 mile Tri-State tollway; and $0.30 from Chicago to Aurora on the 28-mile East-West route. Estimated gross earnings from toll collections are $23.6 million for 1959. This is expected to rise to $47 million by 1969.

• **Engineering pyramid**—A three-level pyramid of engineering and supervisory organization, established early in the program to implement and expedite construction of the tollways, proved to be a remarkable success.

At the top is a staff of about 85 persons representing the toll highway commission. It's headed by Charles L. Dearing, executive director, and George L. Jackson, chief engineer. Austin L. Wyman is commission chairman.

At the second level is the general consulting engineer, Joseph K. Knoerle & Associates, Inc., headed by George F. Noble, project manager. The firm's staff of about 100 coordinated design and construction, prepared design standards and supervise operations.

At the third level are 24 consulting engineer firms, called "section engineers," who prepared detailed designs, furnished the field engineering and are supervising construction of the various sections. At the peak of construction the 24 firms of section engineers employed about 750 engineers and technicians.

The section engineers operate under contracts with the Illinois Toll Highway Commission, on a lump sum fee basis. In general, their fees for designing and supervising construction of roadway sections are 3.25% of the preliminary estimated construction cost. Contract fees on bridge design range from 2.5% to 4.0%, plus an average of 3% for supervising construction.

Texas Highway Department Forms New Planning Group

The Texas State Highway Department has added a new division to its main office for the sole purpose of planning and designing about $60 million worth of urban highway construction annually. Walter F. Frey has been named Urban Engineer to head the new division.

According to D. C. Greer, highway engineer for the department, the new section will be important because about half of the state's expenditures for interstate highways will be for mileage within urban limits.

WHEN AMERICA BUILDS FOR ECONOMY . . . IT BUILDS WITH CONCRETE

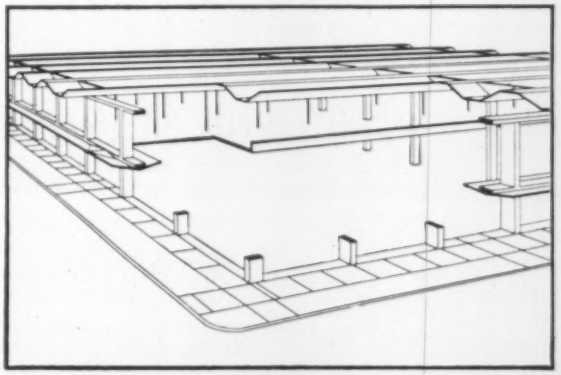
Sears, Roebuck & Company's Tampa store . . .

concrete folded plate roof achieves large, unobstructed floor area

One of the basic requirements here was to achieve unobstructed floor space with economy. Architects Weed, Russell, Johnson & Associates found the answer by using a concrete shell in the form of a folded plate. This construction made it possible to span the entire floor area with only one interior row of columns . . . and suspend the second floor from the roof. The result: 163,715 square feet of *fully flexible* floor space, so important to any retail selling operation.

Folded plate design is, in itself, unique and interesting. And only concrete can give the added boldness of the wide, cantilevered overhang.

It's one more example of the way new uses of concrete are bringing big economies and added vitality to both conventional and modern architecture.



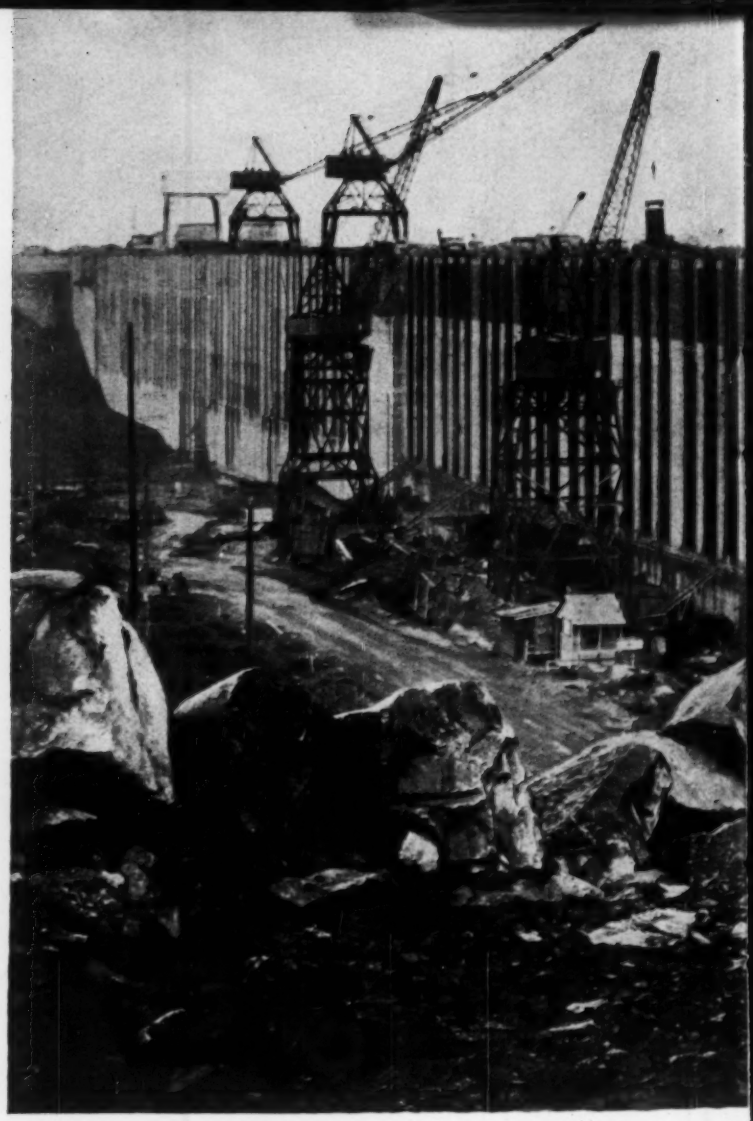
Isometric view showing 125-foot c on c spacing of main columns. Floor slab is supported by 3-inch plates welded together to form a hanger. Hangers are spaced 25 feet c on c.

FOR STRUCTURES... MODERN

concrete

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete



AN ESTIMATED 73% of the petroleum requirements on major St. Lawrence Seaway projects have been supplied by Texaco. Picture shows Bill Partisch (left), Texaco Lubrication Engineer, and Vic Pandolfi, Equipment Superintendent, discussing the Texaco Lube Plan, represented by the numbered barrels. In background, upstream side of Barnhart Island Power Dam and Robert E. Saunders Generating Station designed to generate 1,880,000 kilowatts. Construction of the 3,230-ft. wide, 167-ft. high concrete gravity dam involved excavation of more than 2,500,000 cu. yds. of earth and placing of approximately 2,000,000 cu. yds. of concrete. Dam is a joint project of the Power Authority of the State of New York and the Hydro-Electric Commission of Ontario. Contractors for both U. S. and Canadian sides used Texaco lubricants and fuels, the Canadian contractors being supplied through McColl-Frontenac Oil Co., Ltd., Montreal, a Texaco subsidiary.

NO MORE THAN SIX SERVE ON

Texaco Plan reduces needed lubes to no more than six

MASSENA, N. Y.—Barnhart Island Power Dam is the world's second largest hydro electric project (first: Grand Coulee).

A Texaco lubrication plan and the service that makes it work are credited by the contractor's Equipment Superintendent with playing a significant role in keeping the contractors' equipment in an operating condition.

"The Texaco Lube Plan has really helped," says Victor Pandolfi, Equipment Superintendent for Perini, Walsh, Morrison, Kiewit, Utah Companies, General Contractors. "We've used no more than six high quality lubricants *for the entire project* instead of 15 or 20. There's been less inventory. It's been simpler to service and protect the equipment. We've avoided mistakes in lubrication, and saved manhours and money."

Most Contractors Use Plan

The Barnhart Island Power Dam is just one of the St. Lawrence Seaway projects on which the Texaco Simplified Lubrication Plan has been used. It's estimated that 73% of the petroleum requirements for the Seaway have been supplied by Texaco, and that most maintenance programs have included the Lube Plan.

The Plan has been endorsed for the following reasons: proper lubricants are recommended; less storage needed, reduced confusion and misapplication; lower handling and maintenance costs; less time lost by equipment; fewer lubricating errors; time and money saved.

Developed on the Job, For the Job

The Texaco Simplified Lubrication Plan was developed

THE ST. LAWRENCE POWER DAM

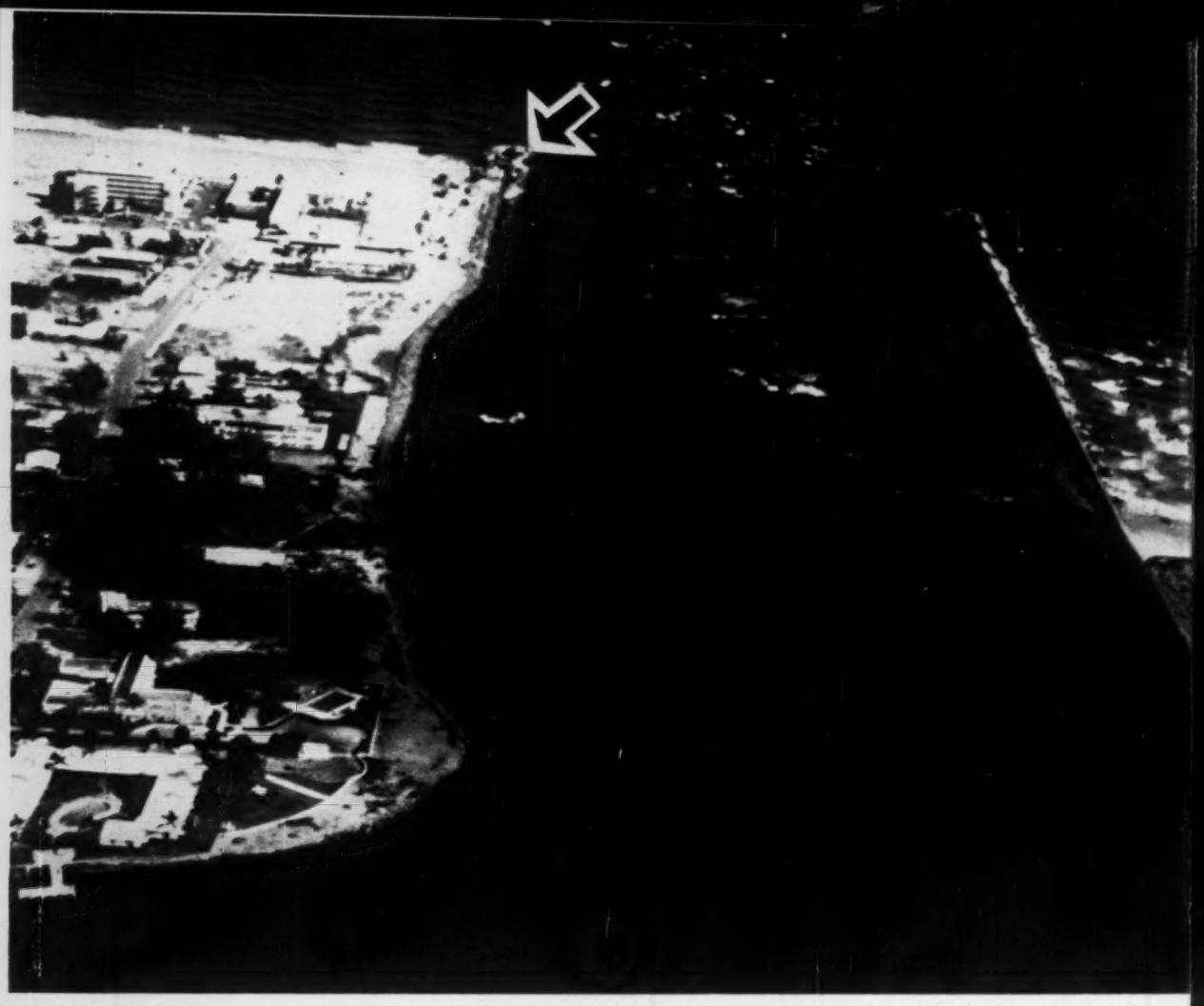
from on-the-job experience in all types of construction work. It's tailor-made for the work to be done. Lubricants may vary from job to job because each Plan is set up to meet the specific needs of a specific project. But regardless of the job, the basic fact remains that—*no more than six lubricants are needed to handle all major lubrication.*

Here are the six lubricants, illustrated above, used on the Barnhart Island project:
(1) For engines: *Texaco Ursa Oil Super Duty Special;* **(2)** for chassis, wheel bearing and general grease lubrication: *Texaco Marfak Multi-Purpose 2;* **(3)** for hydraulic units: *Texaco Regal Oil R&O;* **(4)** for transmissions and differentials: *Texaco Universal Gear Lubricant EP;* **(5)** for wire rope and open gears: *Texaco Crater;* **(6)** for enclosed reduction gears: *Texaco Gear Lube HD.*

Let a Texaco Lubrication Engineer work out a Simplified Lubrication Plan for your project. You'll save time, money and mistakes. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)



PUMP STATION *(arrow)* **sends sand intercepted by jetty beneath ship channel to build up**

Hungry Beach to Be Nourished by Sand

Frederick H. Zurmuhlen
Resident Engineer
Tippetts-Abbett-McCarthy-Stratton,
Consulting Engineers, New York City

A $500,000 sand pumping plant recently completed at Palm Beach, Fla., is expected to build up a denuded beach that's isolated from sand-depositing ocean currents.

The erosion of the beach (at right in picture above) stemmed from the construction of rock jetties completed in 1925, to protect the navigable Lake Worth inlet, entrance to the port of West Palm Beach. The north jetty (at left) has caused an accumulation of sand on beaches to the north, while cutting off the supply of sand usually carried to the south beaches by the current. There is a 1,400 ft differential in the width of the beaches north and south of the ship channel.

The sand transfer station will pump an estimated 250,000 cu yd of excess sand annually from the north beach across the channel. This sand will be discharged on the south beach where littoral ocean currents will pick it up and replenish shrunken beaches as far as ten miles down the shoreline.

The plant is located at the shoreline, 100 ft behind the tip of the jetty. It's a two story reinforced concrete structure equipped with a 30 ft movable suction hose boom. The lower floor contains a 400 hp dredge pump and motor and a power transformer. The upper floor holds the pump controls, ventilating equipment and mast operating equipment.

The dredge pump is a centrifical type unit with a 12 in. suction inlet and a 10 in. discharge outlet. It can handle up to 15% solids at an efficiency of better than 60%. Under optimum conditions, the rate of sand transfer will be 170 to 178 cu yd an hour. The suction hose can be rotated through an arc of 140 deg at a rate of 50 fpm.

• **Groin protects existing beach**—The station is bounded by an L-shaped groin made of sheet steel piling driven flush with the existing beach and capped. The groin will maintain the north beach in its present condition. Only excess sand moving over the top of the groin will come within reach of the suction intake.

The discharge line is 1,750 ft long. The line is an extra heavy steel pipe with ½ in. wall thickness, except for 800 ft across the channel floor. That is wire-reinforced rubber. The hose is made of 50 ft sections, with built-in steel couplings for easy disconnection and removal if the channel is deepened in the future. The hose is anchored to

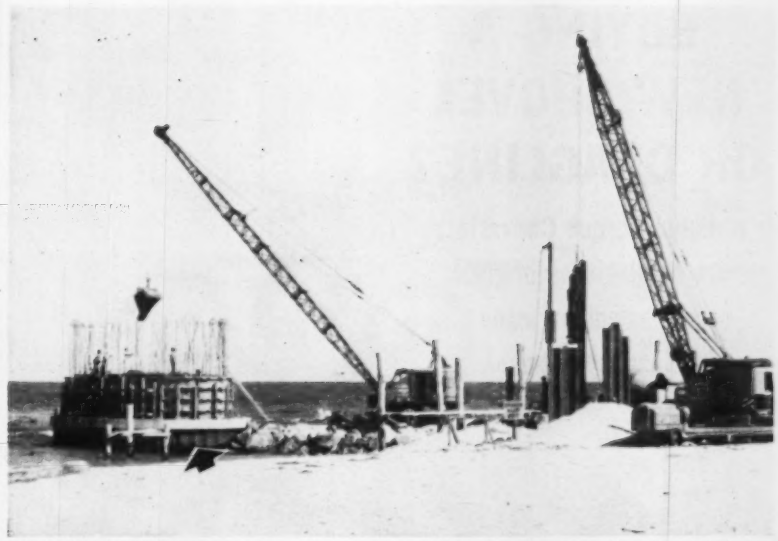
eroded beaches on right.

Pumping Plant

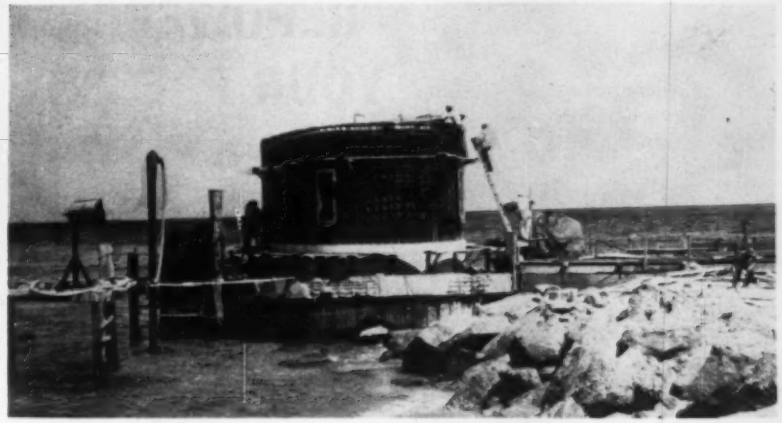
cast iron blocks that have been placed in the channel floor.

If the submerged portion of the line tends to clog because of power failure or stoppage of the dredge pump, water under pressure will automatically flush the line clear. Salt water for this purpose is stored at 70 psi in a 17,000 gal tank located near the plant. When the water is released for flushing, a check valve will close the 10 in. line to prevent backflow into the dredge pump.

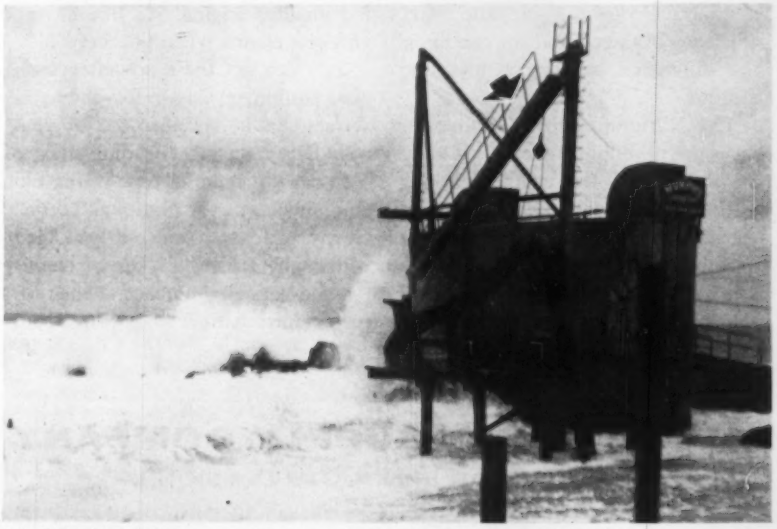
• **Construction is difficult**—To build the pump station, Murphy Construction Co., West Palm Beach, Fla., drove a 20x40 ft sheetpile elliptical cofferman 20 ft below mean sea level. It was capped 8½ ft above ground with a 24x24 in. reinforced concrete beam to eliminate walers and cross bracing—a requirement for the unusual construction that followed. Purpose of the cofferdam was to



SHEETPILE COFFERDAM *(arrow)* keeps jetty rock clear of site. Waterfilled cofferdam was cleared of coral to El −28, then backfilled with sand which supported forms for . . .



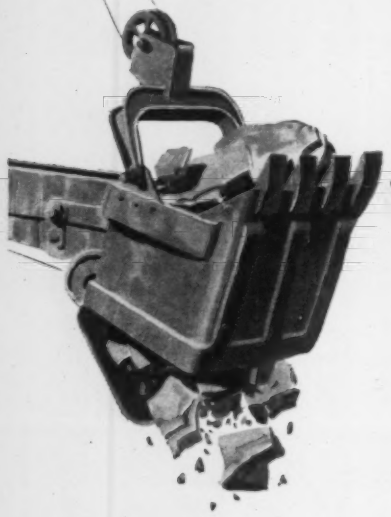
CAISSON FOUNDATION. The 27 ft high substructure was cast in two lifts and sunk by dredging sand from beneath it. Cofferdam cap beam took a beating.



IN OPERATION, pump station's suction hose can be swung by 30 ft boom *(arrow)*. Sand deposited at end of denuded beach is to be picked up by littoral ocean current.

BUYING A NEW SHOVEL OR DRAGLINE?

National Torque Converters are available as original equipment on many leading makes



REPOWERING YOUR PRESENT SHOVELS?

National Torque Converters are available "packaged" or matched with virtually all leading excavator engines

When you have to figure close on a contract job . . . a little extra efficiency in the equipment can make the difference between a loss and a profit.

The National Torque Converter gives this all-important extra. It *takes in* power with the engine working at its most efficient speed and output range. It *delivers* the power at speeds and torques best suited to each operation. It multiplies the torque and so boosts line pull or bucket push, up to three times that available from the unaided engine. It's like having an extra engine when you need it.

You can get these advantages on new equipment . . . for the converters can be specified for original installation on most leading makes. You can get them in repowering old equipment . . . for National Torque Converters are available packaged with many leading makes of diesels . . . and perfectly matched to the rest.

For information . . . just write:

THE NATIONAL SUPPLY COMPANY

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Two Gateway Center, Pittsburgh 22, Pa.

Pace-setters in the progress of industrial power transmission

. . . Pumping plant

protect the site from boulders in the nearby jetty. The boulders could be swept across the site during rough weather, which is fairly common there.

Sand and a 5 ft layer of soft rock below the sand were excavated in the "wet" from the inside of the cofferdam to El −20. The enclosure was then filled with sand to El 4, where a temporary 6 in. thick concrete floor was laid. This provided a platform for the forms of the 18 in. thick walls of the pump station substructure, which was sunk as a caisson.

After the first 14 ft lift was placed and cured, the temporary floor was removed and the sand underneath scooped out to allow the caisson to sink. The procedure was repeated until the bottom of the caisson reached El −28, where a 3 ft thick concrete seal was placed by tremie.

The caisson was backfilled with sand. A 2½ ft reinforced concrete floor for the dredge pump was placed at El −1. The walls of the station were placed in two lifts with the roof 28 ft above grade.

• **Will it work?**—Since the plant is stationary, it must depend on the action of the littoral currents to bring sand within the range of the suction boom. Actual sand pumping will consequently occur only during periods of southward current drift. The dredge pump has been designed to handle the volume of sand as fast as it arrives within range of the suction hose.

The plant has not been put into operation yet, so there is no indication of how close it will come to expectations. However, a similar plant of 80,000 cu yd annual capacity 15 miles to the south has been performing satisfactorily for 20 years.

The Lake Worth inlet plant was designed by Tippetts-Abbett-McCarthy-Stratton, Engineers, New York City, under the direction of Stephen R. Middleton, Palm Beach County engineer. The author served as resident engineer for TAMS. Walter R. Lalley, Jr., directed the construction operations for Murphy Construction Co.

$72 Million Water Plan Will Be Recommended

A preliminary report on the $72 million Callequas water project in Ventura County, Calif., north of Los Angeles, has been completed by the Bureau of Reclamation.

The project is found feasible and recommendation to Congress is proposed. The scheme features a 160,000 acre-ft reservoir on Sespe Creek and a diversion system into a 200,000 acre-ft reservoir near Moorpark.

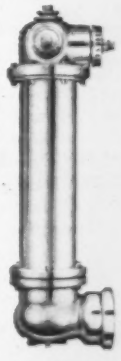
Our representative can explain to you how simplicity of design minimizes maintenance—and to see the R. D. Wood Hydrant you needn't leave your office chair.

"Don't Get Up! Sit Right Where You Are and Let Me Show You the R. D. Wood Hydrant"

"With this scale model I can show you why the R. D. Wood Hydrant has earned its reputation for reliability, strength and permanence. It is simple in construction, too—a fact that makes it low in cost and easy to repair in case of accident.

"The full area main valve is cone shaped to prevent water hammer. It opens *against* water pressure, so that if it is broken in a traffic accident, water pressure will hold it closed. This prevents loss of water, lowering of water pressure, and flooding."

Would you like to see it? Our representative will bring in a scale model and show you its advantages right in your office. Drop us a line today and he will telephone you for an appointment at your convenience.



R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (centrifugally cast in sand molds)

How perforated pipe drains water that seeps upward

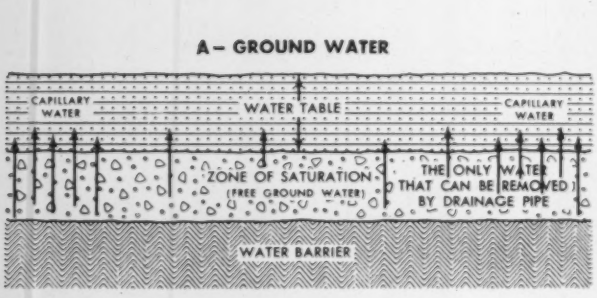
Every good engineer knows the havoc that can be caused by excessive ground water. And much of the trouble can be caused by capillary water that seeps *up* from a reservoir of "free water" underground.

Perforated pipe made from Beth-Cu-Loy galvanized corrugated sheets is very effective in removing free ground water which supplies the capillary water to the subgrade. Properly installed, such pipe collects and removes ground water which first percolates downward by gravity through porous material, then seeps through the perforations into the pipe.

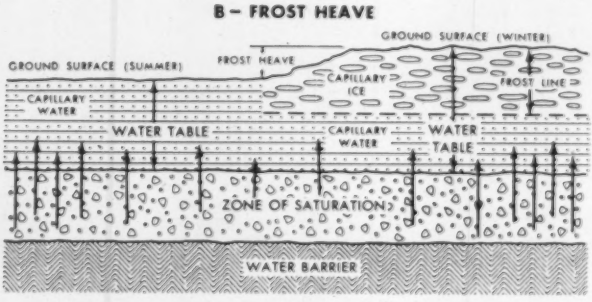
Perforated pipe is placed in a trench of predetermined depth, *usually with the perforations down*. In certain cases a series of parallel trenches is required, particularly where there are wide areas with the ground-water level directly beneath the surface of the ground.

Pipe made from Beth-Cu-Loy sheets is ideal for subdrainage applications. Such pipe is strong, long-lasting and relatively inexpensive. It is flexible, too, which enables it to enlist the aid of the surrounding material to support the imposed loads. In all respects, Beth-Cu-Loy meets the rigid specs of the AASHO.

Bethlehem does not fabricate culvert or drainage pipe. But we do manufacture galvanized Beth-Cu-Loy (copper-bearing steel) sheets which fabricators make into pipe. If you would like further information about Beth-Cu-Loy, or the pipe made from it, just write to the address below and ask for Booklet No. 425-A, "Solving Drainage Problems."

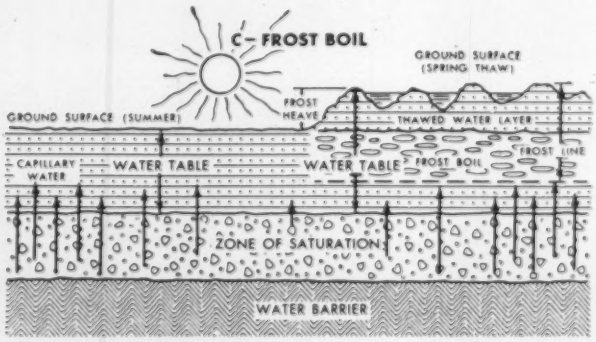

A – GROUND WATER
CAPILLARY WATER
WATER TABLE
CAPILLARY WATER
ZONE OF SATURATION (FREE GROUND WATER)
THE ONLY WATER THAT CAN BE REMOVED BY DRAINAGE PIPE
WATER BARRIER

REMOVE FREE WATER. Water that enters the soil from the surface gravitates downward until it reaches the "zone of saturation." As shown in the sketch, this is the only water that can be removed by drainage pipe. However, with this free water removed, the amount of capillary water is greatly reduced since capillary water in the soil depends on the water table, and will fluctuate accordingly.

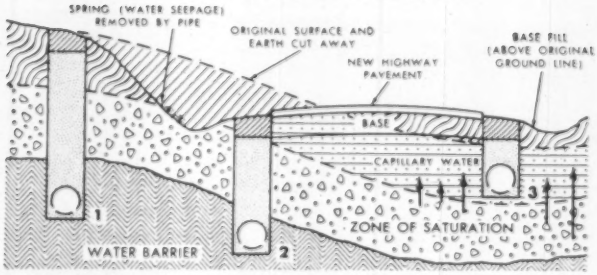


FROST HEAVE RAISES HAVOC. Research indicates that capillary water is the major cause of frost heave. Freezing seems to withdraw water from the soil, and this free water forms free ice. Soil and water become frozen as a mass. More capillary water is attracted to the soil, and is in turn expelled as free ice. This continues until the supply of capillary water is exhausted or cut off by a rapid rate of freezing.

FROST BOIL—ANOTHER VILLAIN. Frost boil acts like an ice barrier, preventing thawed surface water from percolating by gravity to the water table below. Under a pavement, surface soil water can also be sucked up by the pumping action of passing traffic. This water is very harmful because it lowers the stability of the soil in the subgrade, and when the water freezes, it can damage or destroy the surface of the highway.

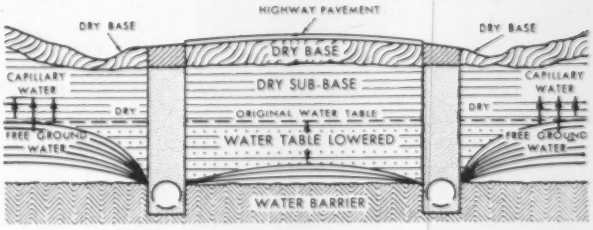


D – CORRECT PLACEMENT OF PIPE



CORRECT PLACEMENT OF PIPE. Pipe 1 will intercept the ground water that became a problem when a bank was cut away during construction of a new highway. Pipe 2 is placed correctly to intercept free ground water on the side of the natural slope. Pipe 3, however, would be ineffectual for two reasons: it is placed on the wrong side of the new highway to intercept the ground water before it reaches the foundation; and the trench is not deep enough to permit the pipe to intercept the ground water under any circumstances.

E – GROUND WATER REDUCED



GROUND WATER REDUCED. Here is an effective use of perforated pipe for lowering the water table. When properly designed and laid in trenches parallel to the roadway, the perforated pipe will draw off ground water, as shown.

For further information about Beth-Cu-Loy, and the pipe made from it, write to the address below for copy of Booklet 425-A, "Solving Drainage Problems."

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. *On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation*

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Lima Type 44-T Truck Crane setting concrete forms for overpass at Fort Washington Interchange of Pennsylvania Turnpike. Machine is owned and operated by F. A. Canuso & Sons, Philadelphia, Pa.

The LIMA Type 44-T..."a quality crane in every respect"

says F. A. Canuso & Sons, Inc.

"I've always had a high regard for Limas," says Julian Canuso of F. A. Canuso & Sons, Philadelphia contractors, "because of their fine design and rugged construction. We've had our Lima Type 44-T Truck Crane for 2 years now, and it has proved to be a quality crane in every respect. It's been kept busy during the past few months on this Turnpike job, mostly working on soft terrain, and we like the way it can get around and handle the heavy loads. Our experience with a real 'old-timer' will give you an idea why we think Limas have what it takes. About 5 years ago we bought a Lima Type 601 that had been working in the hard coal region for 10 years. To bring it up to date, we installed a new diesel engine, and we expect to get many more years of service from it. You just don't seem to be able to wear it out."

Mobile, rubber-mounted Limas are available on 6 x 4, 6 x 6, 8 x 4, and 8 x 6 carriers with capacities up to 70 tons; they will go anywhere a truck will go with speeds up to 25 mph. If mobility is not a factor in your operation, you can get crawler-mounted Limas that will handle loads up to 110 tons. And readily interchangeable front end attachments—shovel, dragline and pullshovel—give Limas the versatility you need for any of your heavy lifting and digging jobs.

Your nearby Lima distributor will be glad to give you the whole story on Lima quality. Get in touch with him today or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

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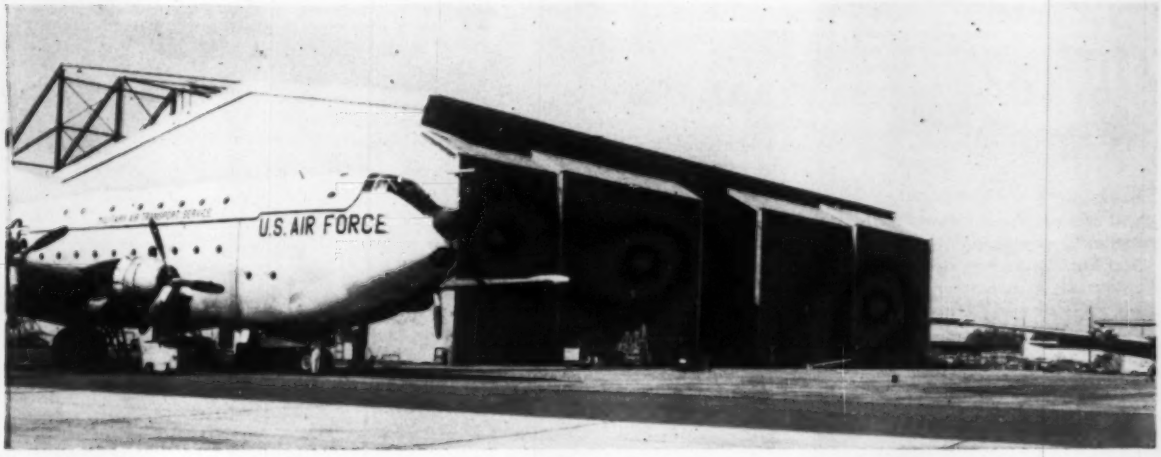
Steel Trusses Cantilever 150 Ft . . .



. . . Over Hangar for Biggest Planes

Hangar space for the biggest planes in existence or in prospect is provided at Oakland, Calif., by cantilevering steel trusses from a concrete anchor structure. The clear area provided is 160 ft deep and 264 ft long, with a maximum floor-to-truss height of 50 ft. Minimum clear height is 40 ft.

Built for the Port of Oakland at Metropolitan Oakland International Airport, the hangar is planned for an ultimate length of 600 ft.

Basic roof structure for the $1.25 million hangar is a series of 13 steel trusses about 150 ft long on 20 ft centers. These trusses are supported by a two-story concrete shop and office section at the rear of the hangar. Tension members are anchored to that structure.

The tension members are exposed above the roof surface. They run from the rear wall to a point 89 ft from the front wall, where they are attached to the trusses. They are supported at the front wall by 12 in. WF 72 lb columns. Tension members are builtup steel "I" sections—four 5x5x½ in. angles, with a web 15 in. deep and ½ in. thick.

The back wall of the anchor building is 12 in. concrete. Footing under this wall is 4¾ ft deep and 7½ ft. wide. Its weight helps considerably in countering the uplift force applied by the long cantilevers. The building is supported on cast-in-place concrete piles.

• **Door design adds space**—Although the trusses are only 150 ft long, a clear space 160 ft wide is provided by use of horizontally hinged doors. These doors accommodate movements as much as 1 ft up or down at the cantilever ends of the trusses.

The three doors are individually electrically powered and provide a total opening of 200 ft.

The Port of Oakland has leased the facility to Aircraft Engineering & Maintenance Co., which is currently using it for maintenance and modification of C-125 Globemaster transports. These are the largest planes currently operated by the armed forces. The hangar will be able to accommodate both Boeing 707 and Douglas DC-8 jet transports.

The hangar is part of a $17.5-million expansion program to prepare for the jet age. Included are a new runway, terminal building and other facilities being built on a recently completed fill extending a mile into San Francisco Bay.

The hangar was designed by O'Neil & Long Associated, a combination of Oakland consulting engineers. Included in the group are R. H. Cooley, H. M. O'Neil Co., and J. Y. Long Co., Engineers, all civil engineers; Woodward, Clyde & Associates, foundation engineers; and Gerlishe & Babcock, electrical and mechanical engineers.

Contractor for the foundation and concrete shop building was Steadman & Powell, Inc., and contractor for slabs, roofing, siding and electrical and mechanical work was Payne Construction Co., Inc.; both are Oakland firms. Judson Pacific-Murphy Corp. furnished and erected the steel framework for the project.

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Multi-Purpose Grease

ALSO PACKED IN

CONVENIENT GREASE GUN CARTRIDGES

Lubriplate No. 630-2 is a high temperature, extreme pressure, water-repellent, grease type lubricant. Ideal for the general lubrication of Industrial, Automotive, Construction, Farm and Marine Equipment. Lubriplate Grease Gun Cartridges provide an easy, quick, economical means of application. Prevent the waste and mess of hand filling. Packed 10 Cartridges in a handy carrying carton.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.

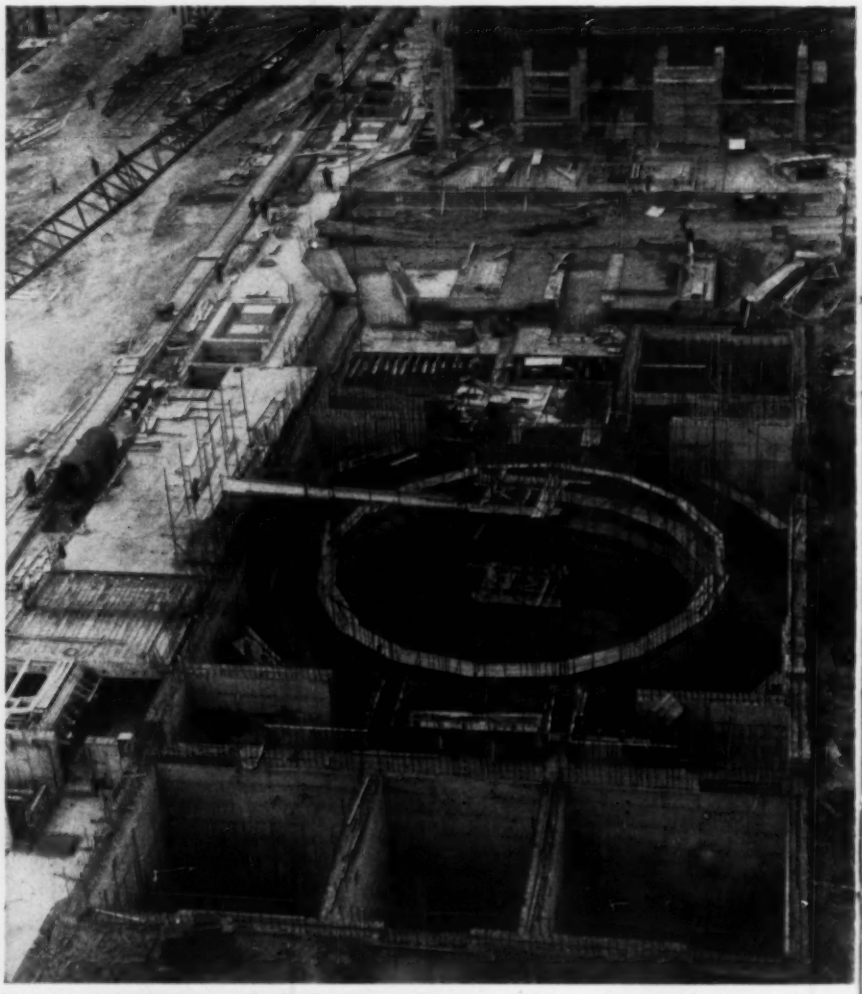
International

King-Size Construction at

These recent photos of current nuclear power station building in Great Britain show some of the unusual and out-size construction methods being employed.

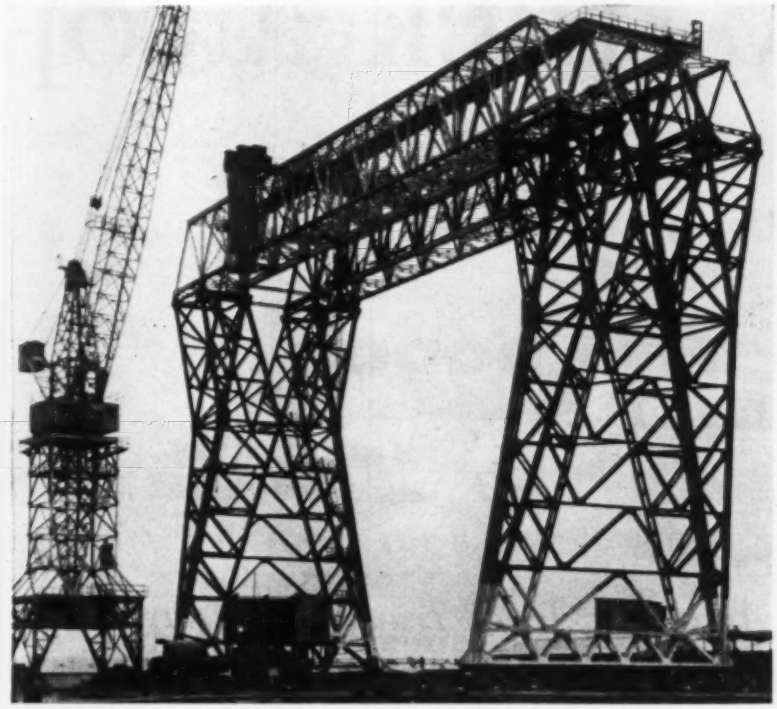
There are four huge plants under way, all patterned after Calder Hall (ENR Jan. 24, 1957, p. 176; Dec. 5, 1957, p. 73). These are: Bradwell, whose 300,000 kw is scheduled for completion in 1960; Berkeley, 275,000 kw; Hunterston, 360,000 kw; and Hinkley Point, 500,000 kw, which will be the last finished, in 1962.

All projects are reported maintaining extremely fast construction timetables —in spite of unprecedented procedures, some of which are shown below.

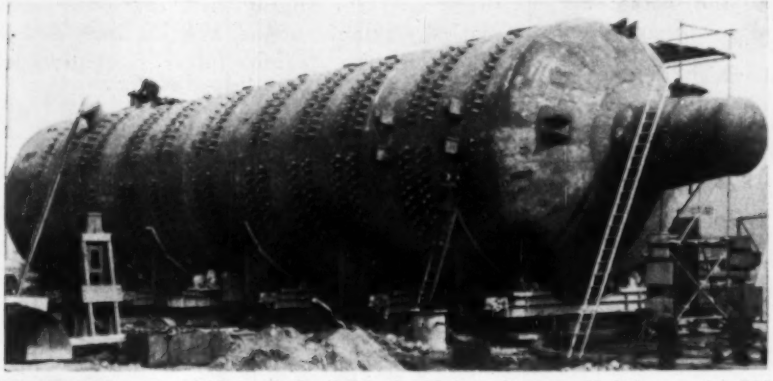


REACTOR BUILDING at Bradwell. There will be two reactors, each surrounded by six heat exchangers (boilers) that will be located around the pressure vessel perimeter. At left is one of the tracks for the huge traveling crane that lifts pressure vessel rings and 200 ton heat exchangers. The Bradwell pressure vessels will be 67 ft dia spheres and operate under 130 psi. (In the Calder Hall type of plant, the large pressure vessel is the reactor shell, rather than an emergency containment vessel as in U. S. designs.) The vessels were fabricated of 3 in. thick plate of special composition to allow site welding and stress relief.

British Nuclear Plants



GIANT TRAVELING CRANE at Bradwell is designed to handle 200 ton loads. It spans 200 ft and is 200 ft high from ground to underside of top truss. An even larger crane is nearly completed at the Hunterston site; it can lift 350 tons anywhere on a 200 ft span. It's also over 200 ft high.



BIG BOILER is one of 12 for Bradwell. They're 19 ft in diameter, 92 ft long, weigh 200 tons. This one has already been floated and towed to the power station, from fabrication yard 277 miles from the site. Floating the boilers eliminates time-consuming overland travel, which requires moving the units piece-meal. Before being launched, the boiler was electrically stress relieved as a complete unit and cleaned internally by a new vacuum shot blasting technique. When in operation, carbon dioxide coolant from the reactor pressure vessel will circulate through the boiler, or heat exchanger, to produce steam.

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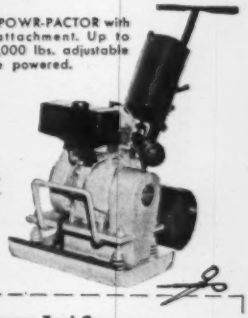
POWR-PACTORS
patch asphalt faster!

Maginniss *vibratory* compactors speed placing and patching of blacktop . . . are easily moved from job to job . . . work fast, at speeds up to 50 ft. per minute. Water feed prevents asphalt adhesion . . . assures smooth finish.

Put Maginniss Powr-Pactors to work on your blacktop jobs. The increased production, lower costs and small initial investment will surprise you. Call your Maginniss distributor today! Maginniss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio. AA-7621

MODEL PP-18 POWR-PACTOR with water feed attachment. Up to 7,000 vpm, 4,000 lbs. adjustable force, gasoline powered.



Maginniss POWR PACTOR VIBRATORY COMPACTOR

Maginniss Power Tool Company
154 Distl Ave., Mansfield, Ohio
Yes, I want to know more about the Powr-Pactor for asphalt work.

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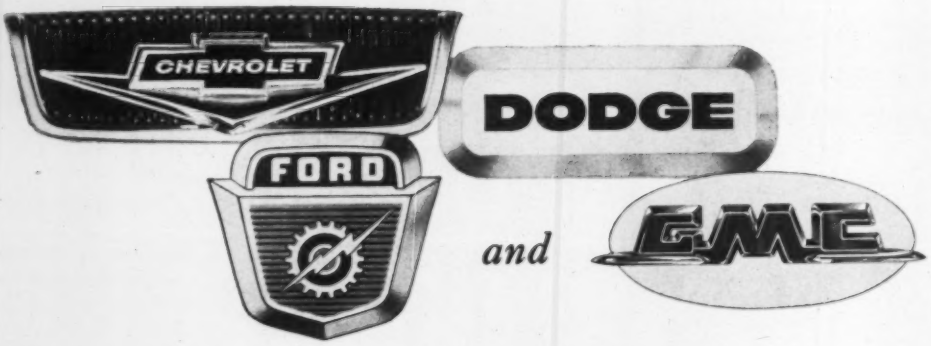
This "Automatic any truck a top

Now available in



the Allison Fully Automatic Truck Transmission pays for itself within the first 12 months of operation.

TAKE a truck—any Chevrolet, Dodge, Ford or GMC truck equipped with the Allison Automatic Transmission—head it for the steepest grade you can find, and watch that "Automatic Brain" start saving work and time.

As you hit the grade, you merely select the range—the "Automatic Brain" does the rest.

As the grade gets tougher, the right gear is selected *automatically*—the engine just can't lug.

When the grade eases up, again the right gear is selected *automatically*—the engine just can't race, either.

Then when you top the rise and head downhill, that's when the Allison Automatic gives you a real performance bonus. For the built-in hydraulic retarder permits faster, safer descents on even the steepest grades.

And hills are only half the story

Sure, this "Automatic Brain" makes a top-notch hill-topper of any truck—but it does a load more than that.

Allison

Brain" makes -notch hill-topper

- Increases payload 33⅓% per trip for West Coast contractor
- Lets 3 trucks do the work of 4 for New Jersey sand hauler
- Cuts brake maintenance 75% for Utah ore hauler
- Gives Michigan car hauler 100 extra miles per day
- Slashes engine maintenance 50% for Rocky Mountain trucker

It really brings America *a new kind of truck.*

Take that built-in hydraulic retarder, for instance. It also lets you slow down in level city traffic without ever touching the service brakes—and that can mean a moneybag full of savings on brake lining repairs alone.

But that's not all this "Automatic Brain" does. It saves fuel with its direct-drive lockup in every forward gear—reduces trip time an average of 18%—boosts engine life 35% by cushioning shocks.

The "Automatic Brain" has been engineered into the newest medium and heavy-duty trucks, school buses and other commercial vehicles by Chevrolet, Dodge, Ford and GMC. It's also available in an integrated engine-transmission power plant with Chrysler and Ford industrial engines.

Get the full story on the money you'll make—*and save*—with the Allison Fully Automatic Truck Transmission from your Chevrolet, Dodge, Ford or GMC truck dealer or write:

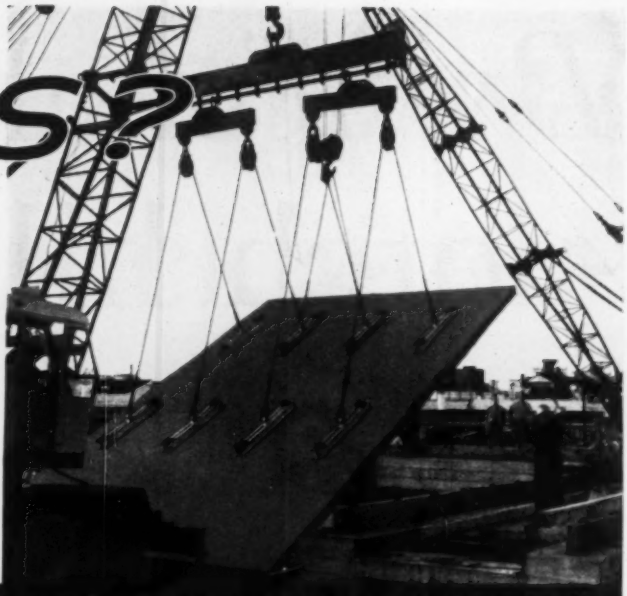
ALLISON DIVISION OF GENERAL MOTORS, Indianapolis 6, Indiana

FULLY AUTOMATIC TRUCK *Transmissions*

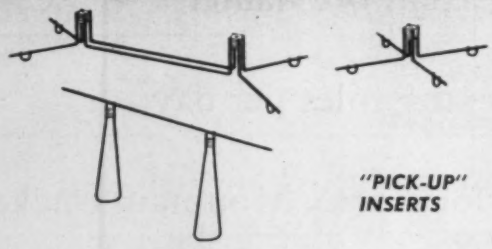
PLANNING TILT-UPS?

From original layouts to final positioning...

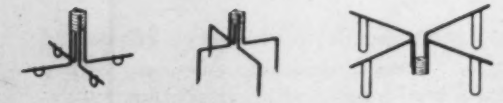
SUPERIOR



HAS THE ACCESSORIES AND THE SYSTEM



"PICK-UP" INSERTS



ANCHORS FOR BRACES

STRESS EQUALIZER

ADJUSTABLE BRACE

PLANNING AND LAYOUT SERVICE

Tilt-Up jobs can be accomplished faster and with greater efficiency by using SUPERIOR Accessories (shown at left). In addition to Accessories which have been used and proven on thousands of conventional as well as unusual projects in this field, SUPERIOR also provides the *system* for the entire job, from original planning and layouts, to the final positioning of the precast panels with Superior Adjustable Braces.

As the pioneer in this field, Superior has recently developed a special Stress Equalizer for reducing lifting stress in tilt-up panels of over 20 ft. high. It offers two advantages: (1) Less concrete reinforcing steel is required for stresses which occur at time of lift; (2) Permits use of simplified crane rigging.

On your next tilt-up job, avoid expensive crane delays, be assured of safety, and reduce overall costs! Specify the SUPERIOR System.

For details request a copy of Bulletin TU-3.

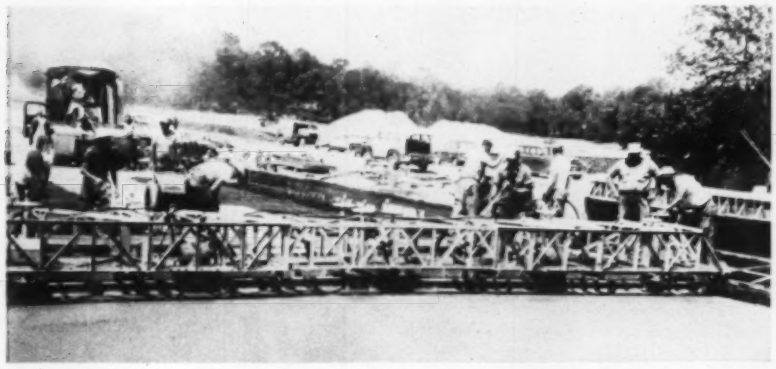
(Shown above) 67,000 LB. PRECAST PANEL being positioned. 19' 6" wide by 35' high by 8" thick. Swinerton & Walberg of San Francisco is the contractor.

SUPERIOR Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.
(A Suburb of Chicago)

NEW YORK OFFICE
1775 Broadway, N.Y. 19, N.Y.

HOUSTON OFFICE
4101 San Jacinto, Houston 4, Tex.

PACIFIC COAST PLANT
2100 Williams St., San Leandro, Calif.



Bridge Finisher Is One Pass Machine

A new concrete bridge deck finisher weighs less than 3,000 lb. The producers say it does a job on bridge decks equivalent to that done on roadways by highway finishers.

The machine strikes off, vibrates, compacts and finishes concrete to specifications in one pass.

Four 12 in. flanged wheels ride on standard forms, bulb angles or pipe rails. Cables mounted on geared winches permit the machine to pull itself forward evenly at a rate of travel varying from 2 to 6 ft per min.

A front strike-off, set about ½ in. above grade is easily adjustable. Vibrating beams are said to give more whip with more effective vibrating action than with traditional screeds.

For adaptability the machine telescopes to finish any deck width from 15 to 31 ft across. Any shape crown, including parabolic and circular, can be put in the front end strike-off through crank adjustments to the equipment. Vibrators are likewise crank-screw adjusted. MASTER VIBRATOR CO., 1752 STANLEY AVE., DAYTON, OHIO.

International Harvester Line Unveiled

International Harvester Co. has unveiled a new line of commercial wheel tractors in six power sizes. They range in size from 10 to 54 drawbar hp and have more powerful hydraulic systems than former rigs. Improved controls, a visual position indicator, three-point hitches and a fast reverser attachment are among other new features.

Smallest tractor is the Cub Lo-Boy, adapted to light utility work. Largest unit, the model 560, is equipped with multi-range, six-cylinder gasoline, LP gas, distillate or diesel engines. Four other models have drawbar horsepower ratings of 21, 28, 32 and 45. Shipping weights range from 1,600 to 6,000 lb.

The three largest models normally have five forward speeds and one reverse. When equipped with torque amplifier, ten forward speeds with two reverse are the rule. Top travel speeds are from 7 to 16 mph. Power steering is optional.

Prices for the new line reflect higher material and labor cost. International's president, Frank W. Jenks, says, "It is quite clear that future increases in steel or labor costs cannot be absorbed in present profits but must [continue to] be reflected in increased prices to some extent. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO, ILL.

(*New Products continued p. 60*)

SINGLE ACTING PILE HAMMERS

Heavy blows — low rate of speed — for driving big, heavy piles steadily and surely — and for driving any pile through heavy, rubbery soil — Sets and meets single-acting specifications—write for details!

McKIERNAN-TERRY CORP.
80 RICHARDS AVE., DOVER, N. J.

Today's Modern Water Tanks Prestressed Concrete Type

Long and Short Term Economies Making Them Popular

A modern prestressed concrete tank is not only economical in first cost, but because of its almost maintenance free character, offers any municipality real long term economy. Any tankage engineering study should include calculated maintenance costs over the estimated life of the facility. Average yearly maintenance on a 3,000,000 gallon steel tank is estimated at $2500 per year at current prices. For a prestressed concrete tank, maintenance is negligible; however, occasional painting for color effect may be desired.

When the charges for servicing the initial cost plus relative maintenance allowances are plotted, the prestressed concrete tank will often show a lower out of pocket cost to the owner in less than 5 years. When these costs and

their increases are extended for an expected service life of 50 years, the savings to the owner with prestressed concrete are enormous.

The prestressed concrete tank is also a good looking tank . . . it is inherently strong and extremely stable . . . it is designed and built for permanence. And, 75% of the contract price is spent right in your local community . . . construction is done with materials and labor available locally.

Write today for more information on Preload Prestressed Concrete Tanks.

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211 East 37th Street
New York 16, New York

PRELOAD CONCRETE STRUCTURES, INC.
837 Old Country Rd., Westbury, L. I., N. Y.

PRELOAD MIDWEST CONSTRUCTION CO.
2211 East 19th Street, Kansas City, Mo.

HERRICK IRON WORKS
28400 Clawiter Road, Hayward, California

THE PRELOAD COMPANY, INC.
Jefferson Tower Bldg., 351 Jefferson, Dallas, Tex.

THE CANADA GUNITE COMPANY, LTD.
7325 Decarie Boulevard, Montreal 16, Canada

Interchangeable Buckets Make Multi-Purpose Shovel

A tractor shovel with six interchangeable buckets of 14, 16, 18, 20, 22 and 29 cu ft capacities can function as a multi-purpose bulk materials handling machine.

With an operating capacity of 2,500 lb, a 4 ft wheel base and an over-all length of 117 in., the Model T-18 is suitable for working in tight areas with a minimum of operating space.

Power for the T-18 is supplied by a six-cylinder, 230 cu in. displacement, Model 30 Chrysler Engine developing 72 hp at 2,000 rpm. It is equipped with fully-automatic torque transmission as well. Elimination of clutch pedal and manual gear is said to reduce driver fatigue and increase over-all operational speed of the equipment.

Sealed hydraulic brakes are designed to prevent brake failure from introduction of loose powder materials. The hydraulic system, generator and distributor also are sealed to keep out foreign material and air cleaners shield the carburetor system. YALE & TOWNE MANUFACTURING CO., CONTRACTORS MACHINERY DIV., BATAVIA, N. Y.

Five Chipping Hammers Give 20 Power Sizes

A chipping hammer with a rubber-bonded shock absorber nozzle has a controlled power valve that allows tailoring the hammer to job requirements.

Five models of the hammer each have four power sizes: light, normal, extra and super cut. A hammer is converted to any of the four ratings by changing the valve box cap. The caps provide a different length of valve travel.

Pistons and other parts of the air-powered hammer are covered with a special chrome-plate for longer life. INGERSOLL-RAND CO., 11 BROADWAY, NEW YORK 4, N. Y.

Pressure Sensitive Tape Seals Polyethylene Film

A pressure sensitive tape designed to solve the problems of joining, patching and splicing heavy gage polyethylene film has been introduced. The manufacturer says the new tape will be useful to contractors using polyethylene film as a vapor barrier in building and highway construction.

Laboratory tests of the water vapor transmission characteristics of lapped, butt, and open joints in 4 mil polyethylene film sealed with .00375 in. pressure sensitive tape, are reported to show a perm rating of from 0.246 to 0.289. This rating is claimed to be considerably lower than the lowest specified for ordinary construction. GERING PRODUCTS, INC., NORTH SEVENTH ST. AND MONROE AVE., KENILWORTH, N. J.

Pressure-Joint Pipe Pulled Home by Novel Coupler

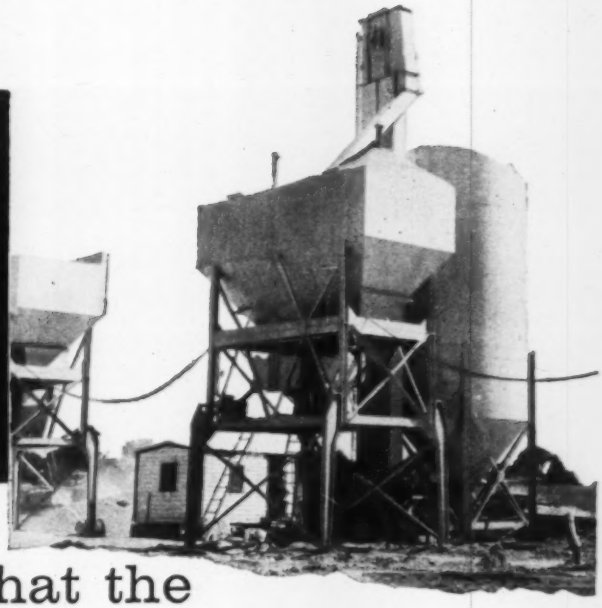
E. H. Wachs has announced availability of a novel pipe coupler that attracted considerable attention at this year's American Water Works Association convention in Dallas.

One member of a pipelaying crew drops the new unit over the loosely made joint, clamps it with the handle at right in the photo, then pulls the pipe all the way home with the leverage arm at left.

The coupler has been field-tested by a number of contractors who have found it suitable for cast iron, asbestos-cement, concrete and clay pressure pipe —especially in conjunction with the popular roll-in rubber ring joint. According to the maker, his unit allows the pipelaying crews to keep up with the trenching.

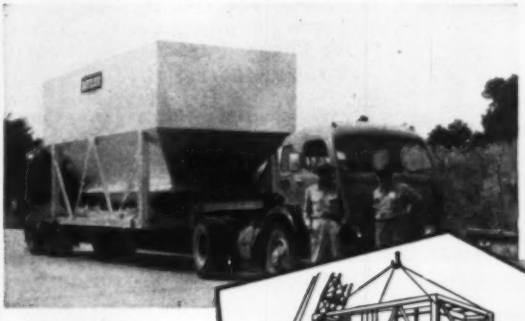
The pipe coupler is available in six sizes, for 6 to 16 in. dia pipe. The largest unit weighs about 70 lb. E. H. WACHS CO., 1527 N. DAYTON ST., CHICAGO ILL.

You can't compete when it's obsolete!



And it's a fact that the *BUTLER TX-4* Roadbuilders Plant obsoletes all existing batching plants

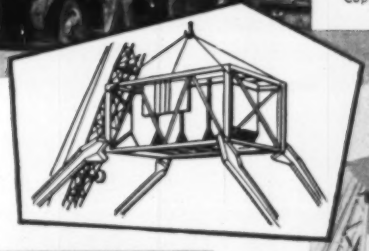
...And It's the World's Most Portable, too. All components—bin, batcher section and control panels — ship as complete packages on low-bed trailers or flat cars.



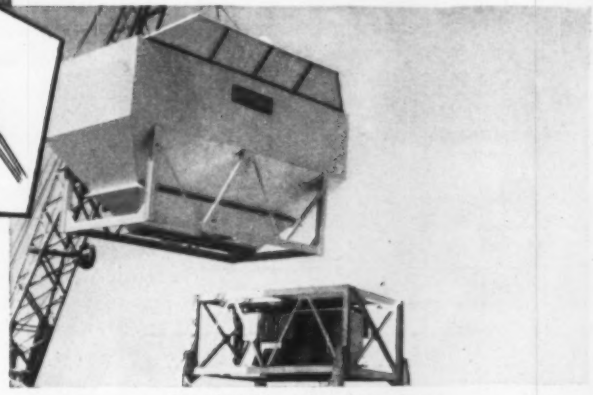
The TX-4 is the world's fastest batching plant... Operation on a 15 second batching cycle has been consistently maintained. *And the TX-4 grows with you.* Basic Plant handles one or two pavers. With one additional bin and a re-arrangement of batchers, the TX-4 keeps pace with three pavers. The same plant with four batchers per bin satisfies four pavers!

Get the TX-4. You can't compete if your plant's obsolete... or if you do bid successfully you've cut deeply into your profit margins.

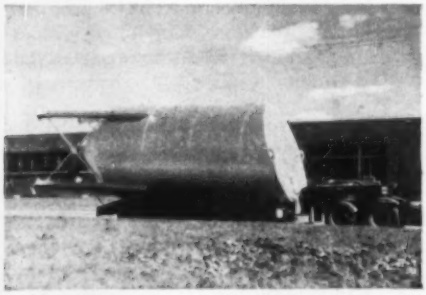
Copyright 1958 Butler Bin Co., Waukesha, Wis.



Support columns are hinged to batcher section, swing into place as batchers are raised.



Complete bin swings into place, rests on batcher section.

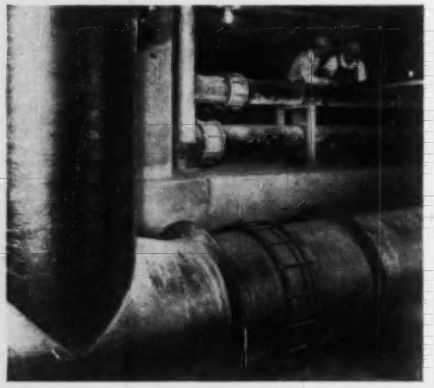


Reserve cement bin ships as a complete unit with legs in-place.

BUTLER BIN COMPANY

947 BLACKSTONE AVENUE • WAUKESHA, WISCONSIN

Joining pipe the Dresser way...

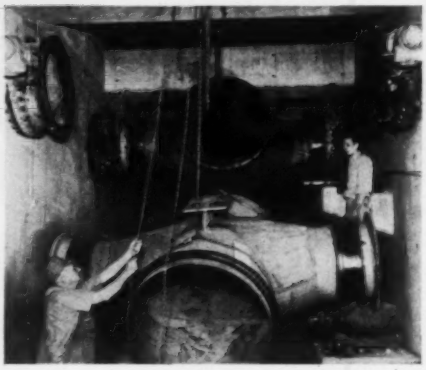


Always the easy way...

The 8-inch, 10-inch and 30-inch Dresser-Coupled lines illustrated here are part of the system used in servicing the Clague Road's advanced rapid-sand type filters.

often the only way!

This battery of steel crosses is in the new Clague Road Filtration Plant, designed by Havens and Emerson, Cleveland, Ohio. The Plant will carry a normal flow of 50-million gpd. Contractor: Hunkin-Conkey Construction Company.



Dresser® Couplings provide the essential leeway for bolting up cross flanges to valves in tight spots. They'll take deviation caused by settling concrete and remain bottle-tight . . . permanently! Dresser's vibration-proof properties protect valves and other expensive equipment, and protect the pipelines, too. With a Dresser Coupling, two man-minutes per bolt gives you a permanent, leak-proof joint that absorbs expansion-contraction movement, keeps maintenance problems to a minimum, and makes repairs easier if and when they do become necessary.

DRESSER MANUFACTURING DIVISION
Bradford, Pennsylvania

Dear Sirs: Please send me my free copy of the Dresser Filtration Catalog, Form No. 158. ☐ If you would also like to receive Dresser's free booklet on Sewage Treatment Plants, please check. ☐

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Publications

Truck carriers—Specifications and accessories for model T-84 truck carriers for 35 ton capacity cranes. Bulletin T84558. The Maxi Corp., P. O. Box 3129, Terminal Annex, Los Angeles 54, Calif.

Asphalt plant—Description of new Model 847 continuous-mix asphalt plant series. Illustrated with photographs, drawings and text. 24 page, two-color bulletin. Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

Highway hazard warning—Recommendations on hazard warning portable lanterns, torches and electronic flashers. 8 page manual. Hazard Warning Lighting Div., R. E. Dietz Co., 225 Wilkinson St., Syracuse 1, N. Y.

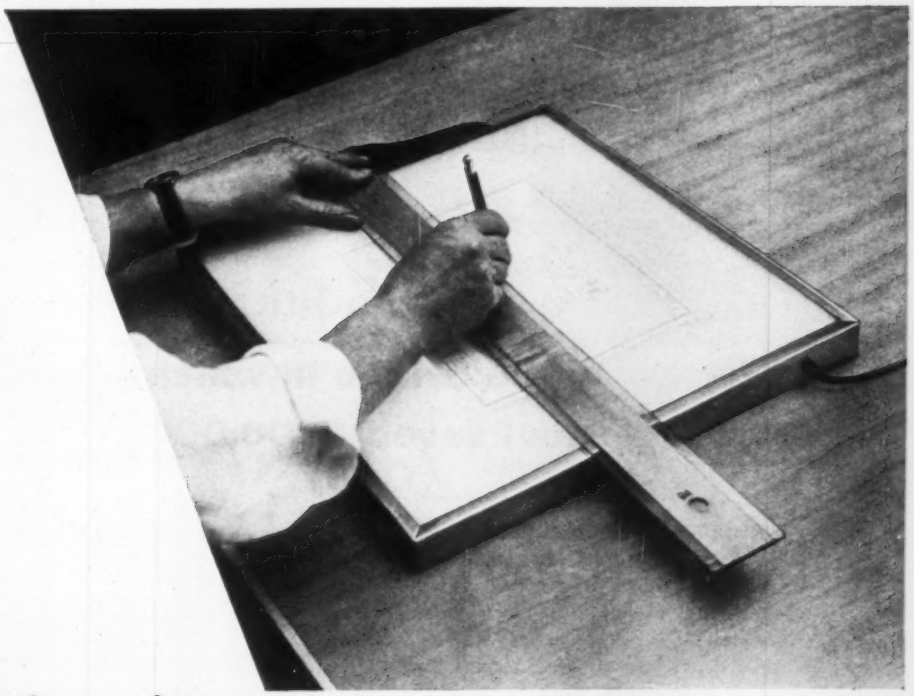
Dust control—Operation and application of equipment in asphalt plant dust control; dry and wet collectors are included. 6 page Bulletin 270-A2. Dept. PD, American Air Filter Co., Inc., 215 Central Ave., Louisville, Ky.

Concrete screed—Outlines engineering features of new lightweight vibratory concrete finishing screed for strike off and compacting concrete slabs in one operation. 4 page brochure, JE2346. Thor Power Tool Co., Prudential Plaza, Chicago 1, Ill.

Blasting chart—To help explosives users compute and analyze true excavating costs. In file folder form for use as permanent record. Accompanying booklets discuss techniques of computing and controlling costs and give detailed instructions for use of chart. Technical Customer Service Section, Atlas Powder Co., Wilmington 99, Del.

Concrete forming accessories—Complete line of form ties, deck hangers, screed supports, and other concrete-forming accessories, together with money-saving methods for bridge and other structure contractors. 6 page bulletin. Superior Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.

Automotive safety regulations—Contains reference material for fleet operators and equipment jobbers giving a complete listing of 1958 laws on vehicle safety equipment. Includes requirements for lights, reflectors, flares, warning markets and turn signals. Automotive Lighting Div., R. E. Dietz Co., 225 Wilkinson St., Syracuse 1, N. Y.



Portability allows use on regular drafting board . . permits complete mobility.

Save drafting time and valuable space . . . use Porta-Trace

Thin, lightweight, long-life construction means easy, at-hand storage.

Now, your tracing table comes to you! Porta-Trace® is a lightweight, portable tracing unit only 1-7/16 inches *thin*. Easily stored with reference books, Porta-Trace is always at hand. Simply pick it up . . . place it on your board . . . flick a switch and you're all ready—in seconds!

This extremely thin unit can actually be used under your present string-type parallel rule. No longer any need for special T-squares formerly required by outmoded, too-high tracing units. Flush-top permits use with drawings larger than unit itself, and unit shifts easily for drawing at any angle. Strong Plexiglas® top is enclosed by rugged long-life stainless steel frame. Available in five sizes up to 36" x 48".

See it today! Call your local Ozalid representative or write Ozalid, Dept. M-8-7, Johnson City, New York.

Porta-trace

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Products for Design

A Division of General Aniline & Film Corporation
In Canada: Hughes Owens Company, Ltd., Montreal

Old and new Carquinez Strait Bridges. Total length of new span is 3,350 feet, four lanes wide. New south cantilever section and part of suspended span appear in foreground at left. Work on north tower, at far right, is in progress. Designer: California Division of Highways. Fabricators and Erectors: American Bridge Division, United States Steel.

Going up:

The Bridge in which USS "T-1" Steel saved $800,000

The Carquinez Strait Bridge is the first major bridge use of USS "T-1" Constructional Alloy Steel, the first large bridge in which all truss members were fabricated by welding, and unique in that the specification of an alloy steel saved $800,000 in construction costs alone.

Like its 31-year-old counterpart, it will connect the San Francisco Bay area with the Sacramento Valley. In profile, the two bridges look like twins, but are vastly different in construction. First, to build the wider, heavier bridge without exceptionally massive members, a weldable, tremendously strong steel was needed. USS "T-1" Steel's yield strength (90,000 psi minimum), combined with its weldability, filled the bill—cutting weight of some members by nearly one-half their equivalent A242 design, and saving $800,000.

Second, welded construction in the new bridge will greatly minimize maintenance expense. It costs about $70,000 yearly to clean and paint the old bridge. By getting rid of thousands of vulnerable rivet heads, edges, lacing bars and angles in the new bridge, members will be less susceptible to corrosion and far easier to maintain.

All in all, 2,910 tons of "T-1" Steel are used in the bridge's most heavily stressed members. Also used: 5,370 tons of USS TRI-TEN Steel, a weldable high-strength low-alloy steel, and 6,440 tons of structural carbon steel. Each of these steels—all available from United States Steel—plays an important role in the bridge, helping to make possible the "most bridge for the money."

For more information. Write for our comprehensive books entitled "T-1" and "TRI-TEN." You'll find in them a wealth of engineering and metallurgical data. Or, contact our nearest representative—you'll find him listed in the telephone directory. United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

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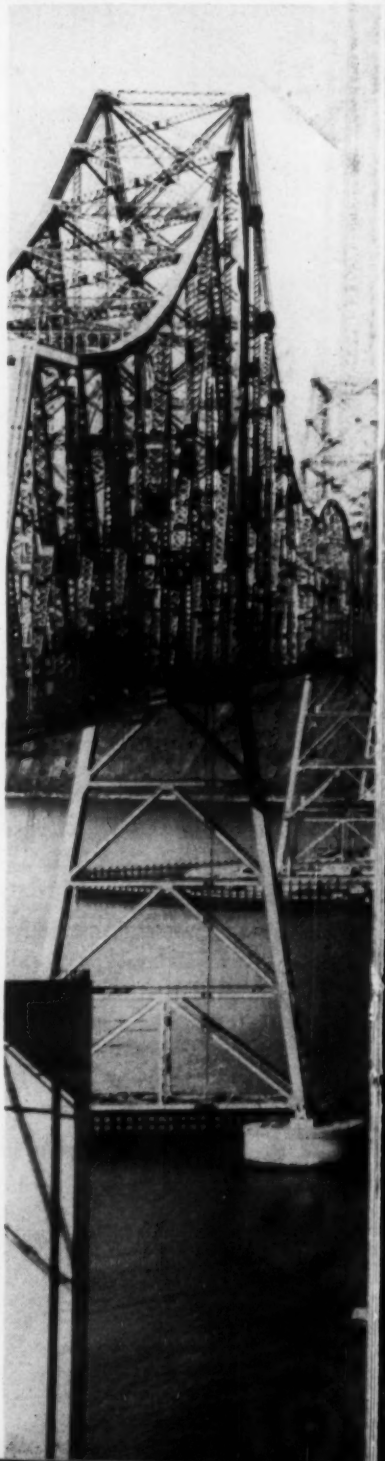


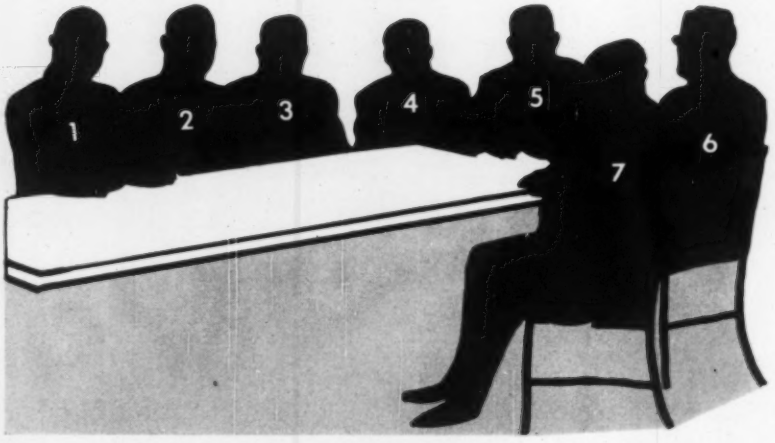
Three things make the new Carquinez Strait Bridge unique in bridge engineering: first, the use of USS "T-1" Steel; second, the use of shop-welded truss members; third, the exclusive use of high strength bolts for field connections.

2 R. T. Colburn *Vice President*

3 R. W. Logan *Treasurer*

4 W. F. Uhl *Chairman of the Board*

1 G. R. Rich *Director*



This board of directors heads . . .

Charles T. Main: Top Consulting Firm

Monday mornings in Boston, when they're all in town, seven engineers sit around a conference table. They consider, among other things, the week's work on two of the biggest hydroelectric projects ever undertaken. They sit as the board of directors of Chas. T. Main, Inc.

It's the nation's biggest, busiest consulting engineering firm. But the directors of this staid, old Boston firm seem completely unaffected by it all.

The engineering partnership that began as Dean & Main in 1893 became Chas. T. Main, Engineer, in 1907. It was incorporated under its present name in 1926. The corporation has grown enormously of late—more than quadrupling its billings just since 1947. Yet, the chairman says: "We're just a bunch of country boys trying to make good."

Country boys they may be—or may have been. But today they are most assuredly big-time, their thriving firm truly a professional organization (a most difficult phenomenon for the oponents of corporate practice of engineering to argue away).

A minority of the firm's seven directors are Bostonians; only two are MIT. The others hail from Michigan State, Colorado, Clemson, Norwich and Worcester Polytech. But the thousand-man organization is solidly New England: nine of 19 associates are MIT; five are from other New England schools. And the work that comes out of the typical, busy drafting rooms of the Boston office is shaping projects that are among the world's greatest.

From a firm dedicated largely to the design of manufacturing and generating facilities for scores of valued, old clients, the Main organization has become world-renowned for its design and construction supervision of the vast St. Lawrence Power Project, and now the Niagara Project. That's close to a billion dollars worth of construction for the Power Authority of the State of New York.

This is not to say Chas. T. Main, Inc., had not tackled any big projects before the New York Power Authority assignments came along. During World War II it saw the $100 million RDX (explosives) plant at Kingsport, Tenn., through to completion in 22 months. Since the war it has engineered the $90 million Sarvar hydroelectric dam and transmission line project in Turkey. And its work over the years for the federal government has included the power plant for Garrison Dam on the Missouri, Clark Hill Dam in South Carolina, and numerous consulting assignments for TVA.

But consulting services for the private client have always been the firm's bread and butter. And the corporation's directors believe it should ever be thus; they realize that public works like the St. Lawrence and Niagara don't come along every day. Their private consulting work for pulp and paper industries is expected to grow over the years. Chas. T. Main, Inc., is on a firm

5 W. M. Hall *President*

6 M. Jacobs *Director*

7 F. M. Gunby *Director*

foundation in this field and hopes to get a greater percentage of the total work available. Industrial printing plants in paper and textile industries also look good for the future.

"You never escape from what you do first," is the way Director Frank M. Gunby expresses the firm's relation to industrial work. This veteran joined "Mr." Main in 1905, and is a font of knowledge of the early history and the philosophy of the firm.

Chairman of the Board William F. Uhl is hardly less a veteran; next year will be his fiftieth with the firm.

President Wilfred M. Hall is the construction man on the board of directors. Before joining the firm to stay in 1941 (he had two short periods of employment earlier) he was in contracting and consulting, with TVA and with Puerto Rico's water resources agency.

Vice President Robert T. Colburn was with TVA 13 years before joining Chas. T. Main in 1945. Treasurer Richard W. Logan is a textiles man, mechanical engineer, who has been with the firm since 1919. Director Milton Jacobs is a pulp and paper mill specialist in his twentieth year with the firm. And Director George R. Rich, hydraulic and structural expert, graduated from TVA to the Main organization in 1945.

These seven men, and their 19 associates, carry on a heritage of consulting assignments well-done that began in another era of engineering.

• **"Mill Architect and Engineer"**—Back in the Nineties, when Mr. Main started out, his shingle read Mill Architect and Engineer. That was the title of the day for one who had studied the mill option (MIT '76) and worked as superintendent of Pacific Mills in Lawrence, Mass., before going forth as a consultant. The mill engineer (architect was later dropped from the title) had to know the mill process—textile, pulp or paper—and he had to know the generation of power to make the mill wheels turn.

Mr. Main learned to think in terms of the process that needed to be engineered. He became a life-long proponent of the idea that the designer of an industrial plant has to know the industrial process intimately. The process is the all-important thing, not the kind of roof you put over it, say Main men today. And they are likely to add: "We're good at hydro because we know the process."

From manufacturing plants to generating plants was a necessary and natural step for Mr. Main in the early days of his consulting work. Each manufacturer had to develop his own power in those early days. When central utility plants and companies did develop, they were largely without engineering staffs. So the textile and paper mill engineering firms like Chas. T. Main readily took on design and construction of steam and hydro installations for them. The move into power plant work was largely upon encouragement of bankers who wanted their investment in young utility outfits assured, at least with the knowledge that the engineering would be sound.

Chas. T. Main did work in 1894 for the Marblehead Electric Co., and this Massachusetts utility is still a client. Other long-standing consulting relationships were established with Montana Power Co., Southern California Edison, and others.

The era-spanning existence of Chas. T. Main included pre-World War I days as mill engineers. During World War I, Mr. Main turned down a lucrative Boston Army Base assignment, lest it appear his presidency of the American Society of Mechanical Engineers at the time had brought the contract.

The Twenties were largely industrial development years in the U.S. and abroad. The Thirties saw much work with TVA and other federal agencies in hydro. The Forties had World War II and the spectacular RDX munitions plant (Chas. T. Main intends always to do a certain amount of government work). The Fifties have been the truly big hydro years on the St. Lawrence and the Niagara rivers, as well as being big in industrial work—a Charlotte, N. C., branch office was opened to follow the New England textile industries south.

• **St. Lawrence, Niagara**—"A firm that spends over 60 years behaving itself is bound to make some friends," says likable Board Chairman Uhl. "Our old clients are our only salesmen."

One of the friends made over the years was John E. Burton, chairman of the Power Authority of the State of New York. He invited Chas. T. Main, Inc. (and 10 other firms) to Ithaca, N. Y. in 1952 to talk about the $335 million St. Lawrence power project. Chas. T. Main and Sanderson & Porter of New York were engaged to do the report that sold the bonds for the project. Then the Boston firm alone was retained for the big design and construction supervision work. The engineering of the four big structures on the International Rapids is mostly history now, with first power soon to be produced and final completion a year away (ENR July 10, p. 21).

Some of the history of this great project is yet to be written. Some of it never will be. But it can be recorded that the project was well engineered and thoroughly supervised in the field by men who knew their way around big dams. The consultant's forces included some seasoned supervisors—TVA, Reclamation Bureau and Corps of Engineer alumni among them.

There have been complaints by contractors that the project's schedule was unreasonable, and that plans on which bids were submitted were inadequate. One thoughtful contractor's engineer expressed well the key question: "Will revenue production on the scheduled completion date truly be worth the extra costs of crash-program construction?" (Yet the extra costs were minor if measured by what little was paid in contractors' claims.)

For the conservative, cost-conscious consultants back in Boston, this con-

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Four cents per ton includes all operating costs for this DragScraper installation. The 2-yd. unit digs and hauls on an average span of 450 ft. (*Request Sauerman News 148.*)

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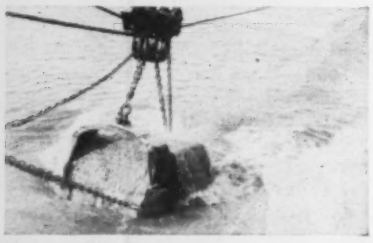
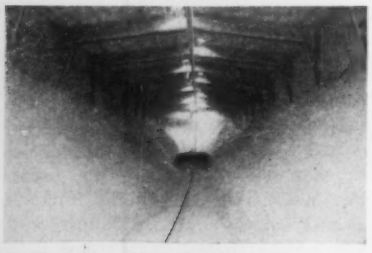


Deep digging

Slackline Cableway Bucket breaks water with a heaping load from 100-ft. depth. A Sauerman Slackline is the low-cost method for underwater digging. (*Request Sauerman News 147.*)

MARINE DRAGSCRAPER SYSTEM



Self-unloading barges

DragScraper Machines provide more cargo space, do a thorough clean-up job in the hold, and lower costs of transporting bulk material by barge. (*Request Marine Brochure MB-1.*)

Ask for Catalog A, DragScrapers, Catalog C, Slackline Cableways and Marine Brochure MB-1 for complete description of these Sauerman Methods.

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struction time question was answered by PASNY, the owner, when it set the rugged schedule for the job. The fact is, the principals at Chas. T. Main, Inc., have enjoyed a total lack of concern over complaints, criticism, public relations and "politics" in their work for New York's state power agency. They are enthusiastic in their praise for the commission's chairman, Robert Moses. Mr. Moses has classed himself as a blocking back who lets his engineers carry the ball, and the Main firm is grateful for the fine blocking he gave them on the St. Lawrence job.

• **Partnership of convenience**—All PASNY work, including the new Niagara work, has been carried out by Chas. T. Main's affiliated partnership in Boston, Uhl, Hall & Rich. This partnership (all seven of the corporation's directors are partners) was a requirement of New York State's education law and its provision prohibiting engineering work in the area of public practice by corporations.

The Uhl, Hall & Rich partnership has a separate payroll that has numbered near 300 between field and office. The office work done in Boston is physically separated in an annex apart from Main's 80 Federal Street headquarters. But in actuality the corporation and its affiliated partnership have a common management and a common pool of engineering manpower.

• **Flexible firm**—To operate as it does—an engineering corporation plus a partnership—on a few huge projects plus a myriad of assorted smaller ones, Chas. T. Main has maintained a completely flexible organization.

There are no specific departments. Each job is under one of the seven directors. A project engineer for each job is given the men, the talent to do the work. Titles are avoided. There is continual shifting of manpower to give all hands a chance at varied work.

Each Monday morning the directors sit down and parcel out the available manpower to the jobs to be done that week. It is difficult to run so large an organization in this flexible way, says President Hall, but it is efficient.

• **Stress construction know-how**—The firm's men in the field—in the plants and on the dams—are the type that "know the process." "Billy" Uhl, who is 77, nods toward big "Mac" Hall, comparative youngster at 64, when he emphasizes the importance of men who are at home in the field as well as in the office. The firm stresses construction management in its plain, quiet brochure:

"Chas. T. Main, Inc., is an integrated engineering and construction management organization comprising a complete staff of engineers, architects, project managers, procurement personnel, construction supervisors and supporting services personnel."

There is no support to be found here for the old saw about a field man being a fellow not quite bright enough to be a designer.

In fact, there is nothing at all negative to be found in the philosophy at Chas. T. Main, Inc. "We have no rules that start with 'don't'," says Director Gunby in his strong southern drawl.

• **Confidence for the future**—Mr. Gunby goes on to project the future from more than a half-century with Mr. Main's firm.

"Chas. T. Main, Inc., will continue to be among the top firms in a broad line of engineering endeavor, of which hydro is but one aspect. There are some fields we don't know; some we don't want to know. But we'll grow through the future under the urge for new knowledge, new friends and money—you'll note I put money third." And his eyes twinkle with sincerity as he says it.

On the question of corporate practice, Mr. Gunby recalls the incorporation and says it was done simply because "professional businesses don't inherit very well as partnerships."

He stresses the fact that Chas. T. Main's legal and accounting advice is engaged as needed; all of the directors are engineers and working managers of the corporation. He thinks this firm may be the oldest of the truly professional corporations (as distinct from companies that do construction) and asks:

"Has engineering outgrown the partnership?"

Careers

Business

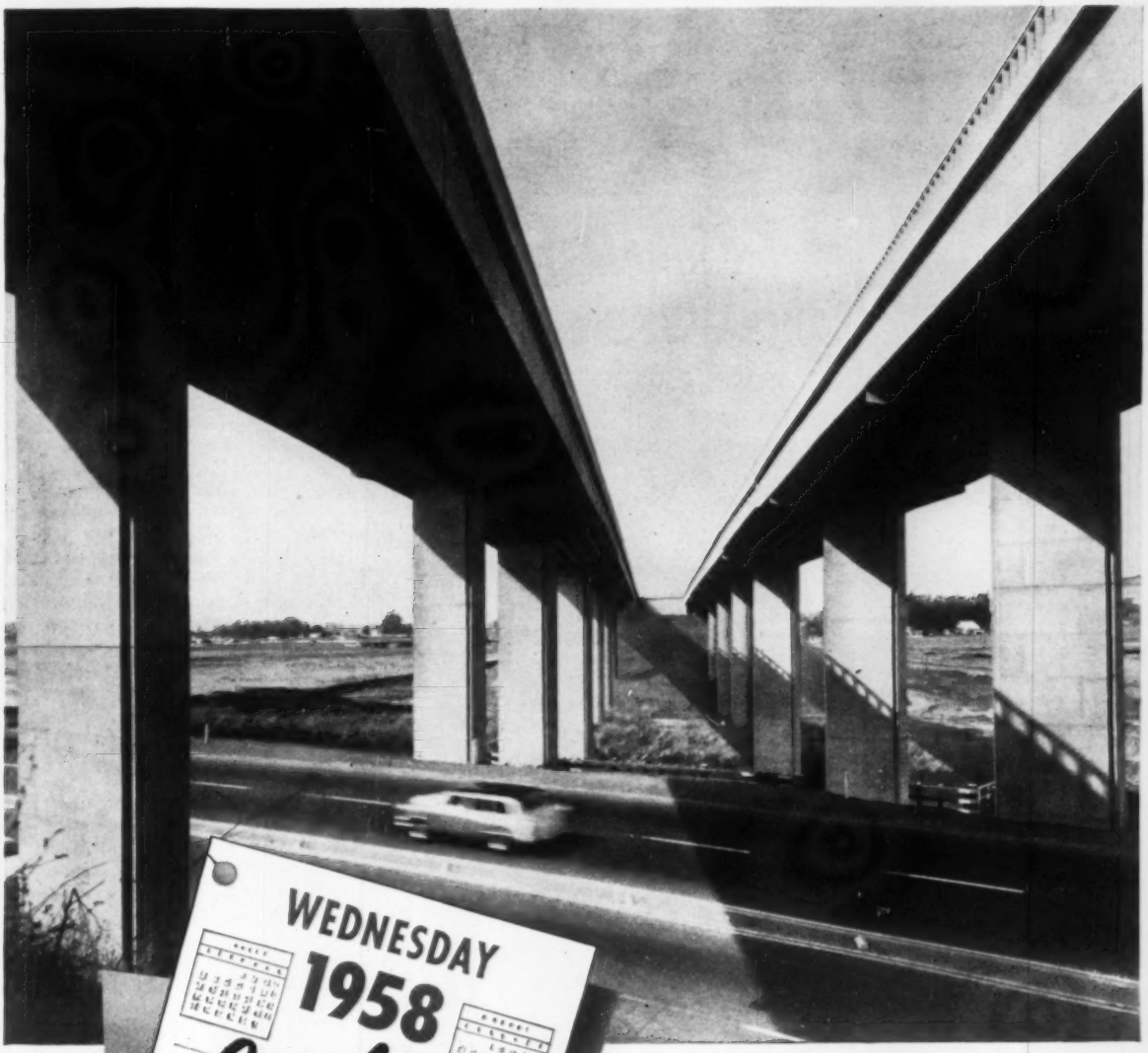
Harold F. Allen, chief engineer of Link-Belt Speeder Corp., Chicago, has retired. He is succeeded by **Frank J. Strnad,** assistant chief engineer.

R. F. Shaw has been elected president of the Foundation Co. of Quebec, Ltd., a subsidiary of The Foundation Co. of Canada, Ltd.

Colin E. Spearing has been elected to the Board of Directors of the Kellogg International Corp., with offices at Kellogg House, London.

Austin K. Thomas has joined the Blaw-Knox Co., Pittsburgh, as general manager of the construction equipment division.

(*Men and Jobs continued p. 70*)



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Petaluma Creek Bridge, illustrated above, was designed by the Division of Highways, Sacramento, California.

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National Board of Fire Underwriters Blame Structural Deficiencies For Staggering Increase

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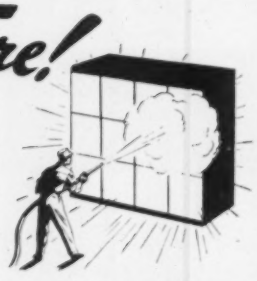
In this dramatic Underwriters Laboratory test, the glass is first subjected to temperatures ranging up to 1600° F., and later to a ¾" stream from a fire hose at 35 to 40 lbs. pressure. Passing the test requires that glass remain in sash, unchanged except for cracking due to thermal shock.



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. . . Men and Jobs

Associations

Prof. Frederick B. Morse, Purdue University, has been installed as president of the Indiana Society of Professional Engineers.

John T. Elfvin has been elected president of the Engineering Society of Buffalo, Inc., N. Y. Other new officers are: **William A. Abberger, Jr.,** vice president; **Richart L. Bewlay,** treasurer; **Robert L. Ward,** secretary.

Harold D. Briley, vice president of Briley, Wild & Associates, Daytona Beach, Fla., consulting engineers, has been installed as president of the Florida Engineering Society.

Harold A. Kelley, partner in Jones, Henry & Williams, Toledo, Ohio, has been elected chairman of the Consulting Engineers of Ohio, functional group in the Ohio Society of Professional Engineers.

Donald P. Schnake has been made secretary-manager of the Consulting Engineer's section of the Kansas Engineering Society.

Lloyd Taggart has been elected president of the Wyoming Engineering Society. He succeeds former State Engineer **L. C. Bishop.**

Public Works

Col. Robert W. Love has been named Mobile District Engineer, U. S. Army Corps of Engineers, effective in July. He was commissioned in the Corps in 1938 upon graduation from the U. S. Military Academy. Recent assignments include duty as engineer officer with the Japan Construction Agency and Army Member of the Standing Group, NATO, in Washington, D. C.

E. O. Parsons has been named utilities engineer of the Montana Highway Department. Previously he had been right-of-way engineer. He will be assisted in his job by **Paul F. Reynolds** as right-of-way administrator, **Thomas Johns** as senior right-of-way administrator, and **Ivan Shaw** as assistant right-of-way administrator.

Joe S. Robinson and **Ernest A. Davidson** have been made assistant chief engineers and **Joseph M. Fox,** bridge engineer, for the Delaware Highway Dept.

Ivan T. Moss has been appointed superintendent of public works for the city of Spokane, Wash., succeeding **Lawrence W. Espey.**

Robert V. Moschell has been appointed chief engineer for the city of Middletown, Ohio. He was formerly city engineer of Alcoa, Tenn.

Ernest H. Stork, former Columbus planning director and more recently a consultant with the Columbus area Chamber of Commerce, has been appointed executive secretary of the State

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Years ago, it would have been a long, costly job to plan and erect a building with all the quality features found in the Butler building above.

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Interior (top picture), Marsh Steel, Denver, Colorado, photographed in natural daylight admitted by Butler Lite*Panls in roof. *Exterior,* The Barber Colman Co., Milton Junction, Wisconsin.

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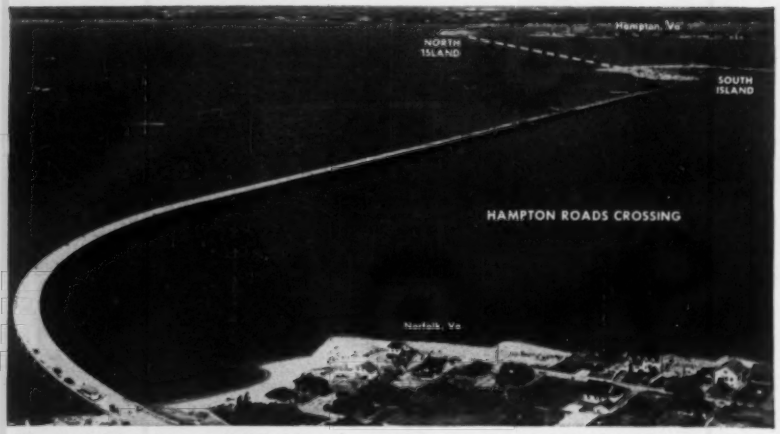

Man-made Islands Connect 6860 foot Tunnel with Two Bridges for Vehicular Traffic at Hampton Roads Crossings, Va. For: Commonwealth of Virginia, Department of Highways. Contractor: Merritt-Chapman & Scott Corp. Consulting Engineers: Parsons, Brinckerhoff, Hall & Macdonald.

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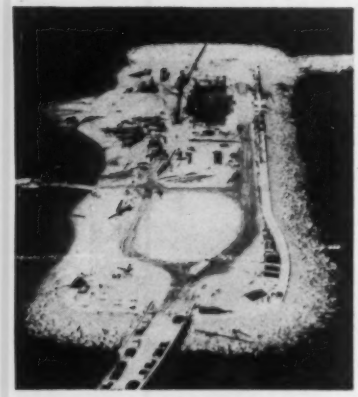
was used to compact the sand on these man-made islands and provide a stable base for the foundation of tunnel portals.



North Island is man-made and covers 4½ acres. Its approach strip and entrance has foundation compacted by VIBROFLOTATION. The same is true of South Island.

The tunnel portals of North and South Islands are supported in a compacted mass of sand to prevent possible future foundation settlements.

A bed, 20 ft. deep and 50 ft. wide, was compacted to support the ramps from bridge to tunnel. Maximum depth of vibroflot penetration was 62 ft. Minimum depth was 10 ft.

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V-13

. . . Men and Jobs

Office Building Commission. He will direct construction of the $15 million office building.

P. T. Poage, assistant state architect in charge of design and planning of California public buildings since 1926, will retire August 1. A veteran of 36 years service with the state, he saw state building construction under his supervision mount to a total of $1 billion.

Brig. Gen. William R. Shuler is new Mediterranean Division Engineer for the Corps of Engineers, replacing **Brig. Gen. L. J. Lincoln,** who has been assigned as Army Deputy Chief of Staff for Logistics in Washington, D. C.

Henry C. Beckman has retired as division hydrologist of the U.S. Geological Survey, Water Resources Division.

Col. Walter L. Winegar has been named Portland Ore., District Engineer for the Corps of Engineers, succeeding **Col. Jackson Graham.**

Bruce Sasse has been appointed chief engineer of the City Water Board of San Antonio, Tex.

Charles Walte, Jr., is new director of the Louisville City-County Planning and zoning Commission. He succeeds **William L. Watts,** director for the last five years, who is taking a position with a private firm.

Walter S. Piper is new city engineer for the city of Ravenna in Portage County, Ohio. A graduate civil engineer, he formerly was associated with Robert Krause Engineering Co., Cleveland.

Matther J. Stegner, senior planner for the Mahoning County Planning Commission, Youngstown, Ohio, has been named planning director for Erie County, Pa.

Michael Foster, a former member of the Metropolitan Planning Department of Indianapolis, has become senior planning engineer for the Arkansas Industrial Development Commission.

Robert T. Bailey, deputy city engineer of St. Catharines, Ont., has been appointed to the post of city engineer. He succeeds **B. F. Lamson,** who is retiring.

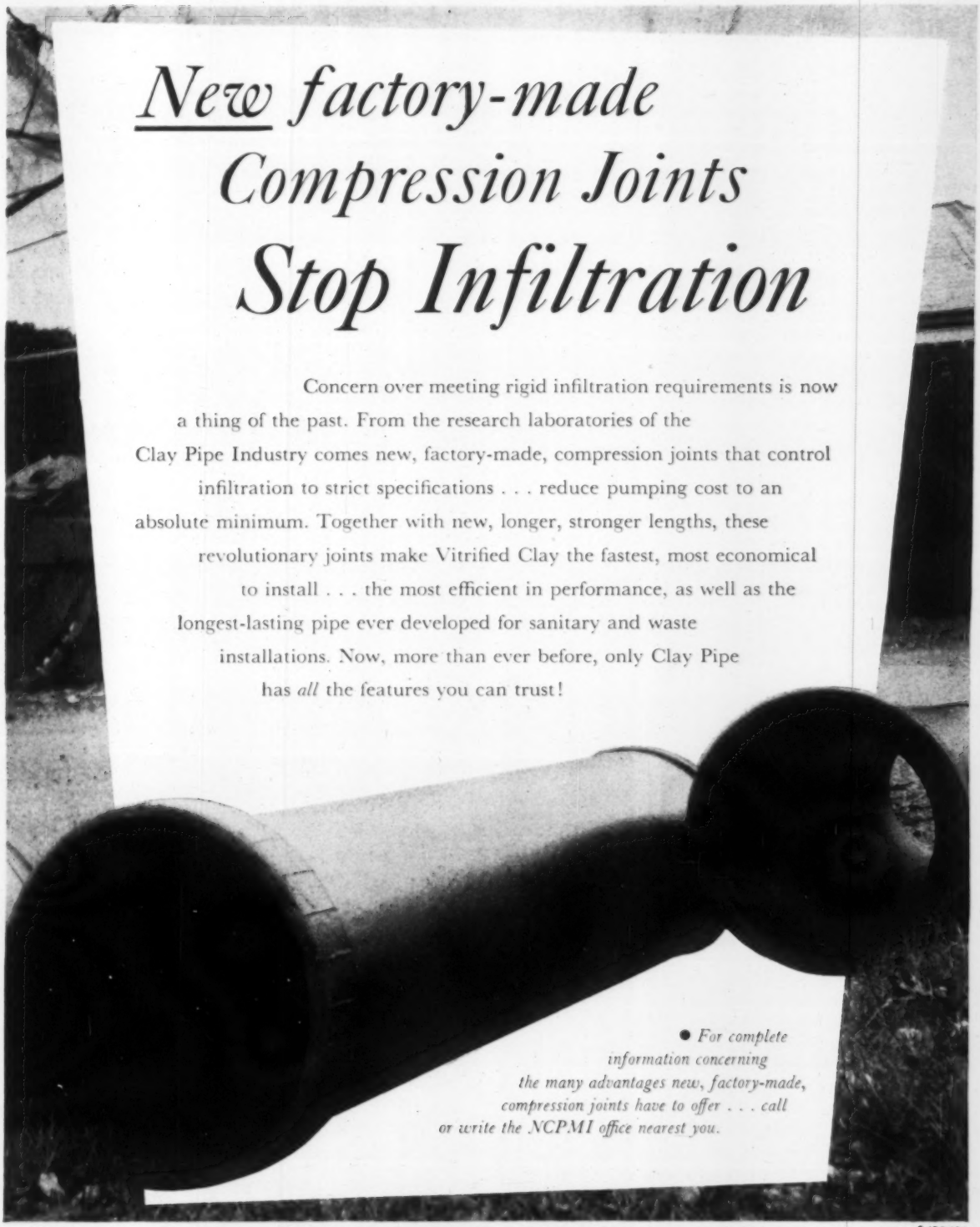
Henry M. DeNoble, formerly traffic engineer and director of planning at Springfield, Mo., has become traffic engineer at Little Rock, Ark.

T. Keith Legare has been re-elected chairman of the South Carolina State Board of Engineering Examiners.

Kenneth Ziems, chief construction engineer in the Lucas County, Ohio, engineer's office, has resigned to become assistant area engineer for the U. S. Bureau of Public Roads. He will be headquartered in Columbus, where he will have charge of 12 northwestern Ohio counties.

New factory-made Compression Joints Stop Infiltration

Concern over meeting rigid infiltration requirements is now a thing of the past. From the research laboratories of the Clay Pipe Industry comes new, factory-made, compression joints that control infiltration to strict specifications . . . reduce pumping cost to an absolute minimum. Together with new, longer, stronger lengths, these revolutionary joints make Vitrified Clay the fastest, most economical to install . . . the most efficient in performance, as well as the longest-lasting pipe ever developed for sanitary and waste installations. Now, more than ever before, only Clay Pipe has *all* the features you can trust!



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Don Cunningham Construction Co.—with a crack crew and a fleet of Allis-Chalmers construction machines—have set an outstanding record on a New Mexico soil conservation job. They completed a flood control project scheduled for 180 days in 75! It involved 325,000 yd of earth fill.

Don Cunningham gives major credit to his Allis-Chalmers fleet—motor scrapers, crawler tractors and motor grader. He's convinced that top machine availability and extreme ease of handling are the big reasons why men and equipment were able to maintain the record pace. Cunningham estimates profit on this contract will be 20 percent greater than figured in the original bid—a hefty bonus on any job!

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The Cunningham Construction Company is proud of its reputation for high-production earth moving. Says Don Cunningham: "The combination of Allis-Chalmers' productive machines and a first-rate operating crew, teamed with the excellent service our dealer provides, amounts to *an unbeatable formula for sure profits in this industry.*"

The equipment spread includes four Allis-Chalmers motor scrapers—two TS-360's and two TS-260's—plus five turbocharged HD-21 crawler tractors. Two of the tractors are used as pushers, one as a dozer. Another HD-21 tows a four-gang sheepsfoot roller and the fifth pulls an 18-yd scraper. An Allis-Chalmers FORTY FIVE motor grader levels fill, keeps haul routes smooth for high-speed scraper cycles.

Big 120-horsepower FORTY FIVE motor grader blades fill at dam site, keeps pace with fast-moving equipment like the 20-yard TS-360 motor scraper at right.

The flood control job consists of building two dams and diversion dikes, moving an estimated 325,000 cu yd in the Dona Ana area north of Las Cruces, New Mexico. Working a 54-hour week, the 10-man crew moved nearly 200,000 yd in the first 4½ weeks. This impressive volume brought construction people from all over Texas and New Mexico to see the spread in action.

Don Cunningham, veteran of more than 30 years in earth moving, points out that such performance is a powerful factor in bringing in more construction jobs.

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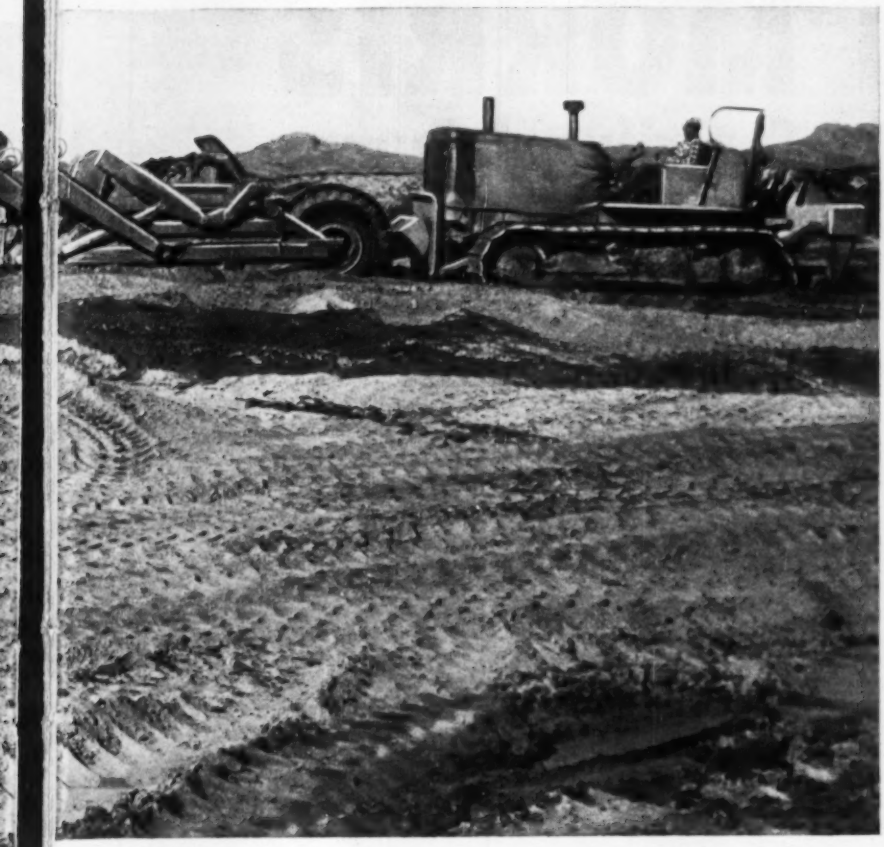
Don Cunningham
El Paso, Texas

Four Allis-Chalmers motor scrapers, push-loaded by 225-horsepower turbo-charged, torque converter-equipped HD-21's, moved nearly a quarter of a million yards the first month, helped boost profits 20 percent for the whole job.



PREVENTIVE MAINTENANCE PAYS OFF AGAIN!

Chief mechanic, "Snuffy" Oliver, and his assistant have an effective preventive maintenance program, including daily inspection of tracks, fan belts, blowers, turbochargers, cables, clutches.

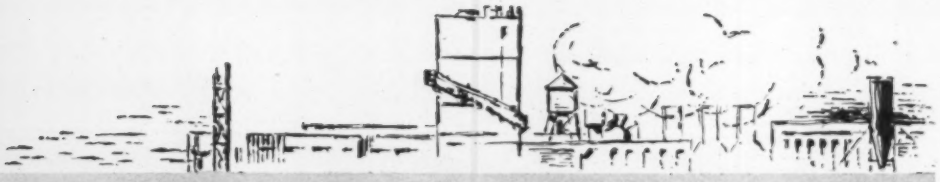
This regular maintenance keeps Cunningham's Allis-Chalmers fleet in first-class condition. Daily lubrication, servicing and inspection requires about 20 minutes a day for each machine. No other time was lost during the nine-hour working shift.

Compacting scraper-hauled fill, big HD-21 crawler tractor tows four-gang sheepsfoot roller.

The easy-service design of Allis-Chalmers crawler tractors, motor scrapers and motor graders speeds the preventive maintenance routine. For example, truck wheels, idlers and support rollers need lubrication only once every 1,000 operating hours. Time-saving convenience like this keeps every machine ready for action.

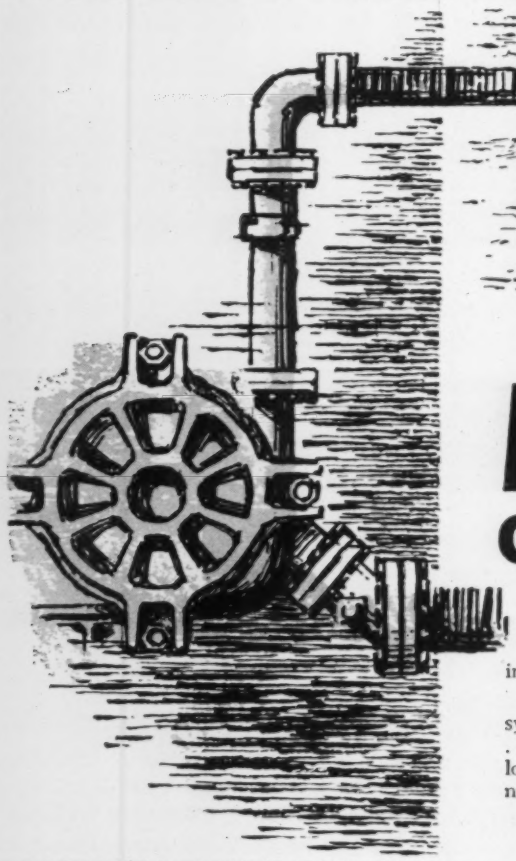
Whether your operations call for one unit or a fleet, you can get high production like this. Your Allis-Chalmers dealer will recommend the right equipment for your jobs—from a complete line of up-to-the-minute construction machinery. See him now and ask for a demonstration on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee, Wisconsin.

with ALLIS-CHALMERS

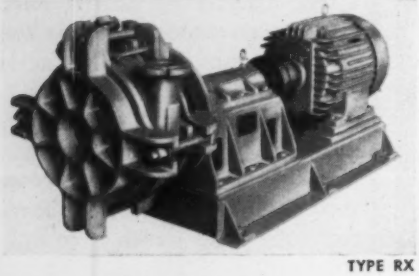


Industry problem: Pumping away pollution

Artist's sketch based on Morris pump installation for dust and gas control at lime manufacturing concern. Reprints of story describing this installation are available on request.



Two Type R Morris pumps used in this pollution control system pump 150 gal/min of corrosive slurry—ranging from 12% to 30% solids—against total dynamic heads which vary from 35 to 100 feet.



TYPE RX

MORRIS
Centrifugal Pumps

More and more, government at all levels is calling upon industry to prevent pollution of streams and air.

Engineers coping with this difficult problem are turning to systems of recirculated water to capture undesirable materials . . . reduce them to slurry . . . deposit them in unobjectionable locations . . . and recycle the reclaimed water. Morris has pioneered in the development of such systems.

CASE HISTORY: Dust from the plant of a leading lime manufacturer lay on the roofs of a nearby town like snow. Wastes were lethal to a formerly abundant stream life. Two Morris pumps were installed to furnish spray for wet dust collectors newly connected to each kiln. Two more Morris pumps lift the resulting slurry 40 ft., through 700 ft. of pipe, to deposit it in a mine abandoned by the company. The success of this system prompted the company to extend it to serve new kilns soon to be built.

Where efficient pumping performance must be maintained — even under adverse conditions — it pays to know your pump, *in advance*. Applications engineering for difficult problems is a standard part of Morris service.

Talk with our engineers. They are qualified to recommend pumps of modern hydraulic design that you can depend on for years of uninterrupted service.

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PUMPS

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Books

Construction Estimator

THE PROFESSIONAL CONSTRUCTION ESTIMATOR—by Jacques Ing Cramer Priest. 184 pp. The Professional Publishing Co., Laguna Beach, Calif. $15.

This pocket size "Labor and Material Calculator" shows hours of labor per unit of construction: hours per pile to drive, hours per cu yd or per sq ft to excavate or to trim and shape, hours per 100 sq ft for waterproofing, hours per lin ft for piping hours; hours per 100 lin ft for electric wiring cable and duct.

For piles, crew-hours is the production time unit, but the size of the crew is not defined. For other items, it is not clearly indicated whether "hours" are crew-hours or man-hours and no crew sizes are shown. It is clearly defined that hours are net and do not include supervision, general conditions, insurance, health and welfare, taxes, insurance, unusual conditions, overhead or profit. The estimator using this manual would have to do his own pricing and make his own allowances for additions to cover these labor-related costs, as well as materials and equipment costs.

A foreword outlines the need: for good estimating, for proper take-off procedure and for some means of reducing the high cost of preparing bids.

Quantity tables reduce feet and inches to decimals, convert hours and minutes to decimals, show weights per cu ft for various materials and show calculated quantities for various situations; for example, cu yd of concrete in belled caissons—and other structural units.

Numbered sections show hours per unit of various items in these categories: Piles and Sheet Piling; Earthwork, Excavation, Rock Blasting, Asphalt Quantities, Tree Fall and Cut-up; Concrete Forms; Concrete Placing, Finish, Screeds and Concrete Quantity Factors; Reinforcing, Wire Mesh and Miscellaneous Iron; Waterproofing; Rough Carpentry, Finish Carpentry, Cofferdams; Finish Hardware; Glass and Glazing; Lath and Plaster; Masonry, Marble and Stone; Painting; Roofing; Sheet Metal; Structural Steel, Rigging, Heavy Machinery, Sand Blasting, Steel Sash; Plumbing and Heating; Heating and Sheet Metal Fabrication; Electrical.

Asphalt Pavements

DESIGN AND CONSTRUCTION OF ASPHALT PAVEMENTS—By J. Rogers Martin and Hugh A. Wallace. 312 pp. McGraw-Hill Book Co., New York 36, N. Y.

Coming as a comprehensive manual covering a field that up to this time has had little or no textbook coverage, the book outlines methods and technology for design and construction of the many types of asphalt in use today.

The text deals with such subjects as types of asphalt pavements, petroleum asphalts, mineral aggregates, design of hot-mix asphaltic concrete, construction of hot-mix asphaltic concrete pavements, asphalt pavements and bases using liquid asphalts, surface treatment and seal coats, reconstruction of old pavements, design of the flexible system, testing procedures and design methods. The techniques presented represent major practices throughout North America.

While the authors' treatment is essentially practical, it includes the theory needed for a broad understanding of principles involved in good design and construction.

Reports and Pamphlets

POWER CRANES AND SHOVELS, Commercial Standard CS90-58. U. S. Department of Commerce. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 20 cents.

NONDESTRUCTIVE TESTS IN THE FIELD OF NUCLEAR ENERGY—420 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $10.00.

BUILDING FOR PEACE AND PROSPERITY—by Robert S. Hale. Exposition Press, Inc., 386 Fourth Ave., New York 16, N. Y. $3.00.

RIGID FRAME FORMULAS—by A. Kleinlogel. 460 pp. Frederick Ungar Publishing Co., 105 E. 24th St., New York, N. Y. $14.50.

ENGINEERING ECONOMY—by Clarence E. Bullinger. Third edition. 379 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $7.00.

RECENT ADVANCES IN THE ENGINEERING SCIENCES—Proceedings of Conference on Science and Technology for Deans of Engineering—257 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $4.75.

ESTIMATING CONSTRUCTION COSTS—by R. L. Peurifoy. Second edition. 446 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $10.75.

BIOLOGICAL TREATMENT OF SEWAGE AND INDUSTRIAL WASTES: Volume 2—Anaerobic Digestion and Solids-Liquid Separation. 330 pp. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. $11.50.

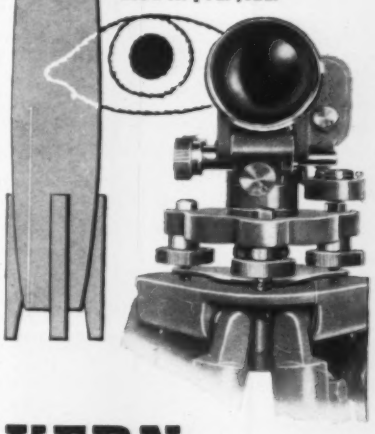
CEMENT AND CONCRETE—158 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $4.00.

STEEL PIPING MATERIALS—A-1—460 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $5.00.

ELEVATED TEMPERATURE PROPERTIES OF WELD-DEPOSITS AND WELDMENTS—STP 226—228 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $5.50.

You're Not Behind
The Times
IF You're Behind a
KERN
INSTRUMENT

Obsolete surveying tools are time-consuming, wasteful ... out of step with modern construction equipment used on your jobs.



KERN THE MOST MODERN surveying instruments available. Down-to-fundamentals, functional design ... maximum operational efficiency and portability ... reliable precision results.

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for accuracy, speed, reliability, economy.

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120 Grand St., White Plains, N.Y

SPECIFY A *Proven* SUBMERSIBLE PUMP

SPECIFY "weil"

weil Submersible Sewage and Sump Pumps have been in use since 1951. There is no substitute for experience.

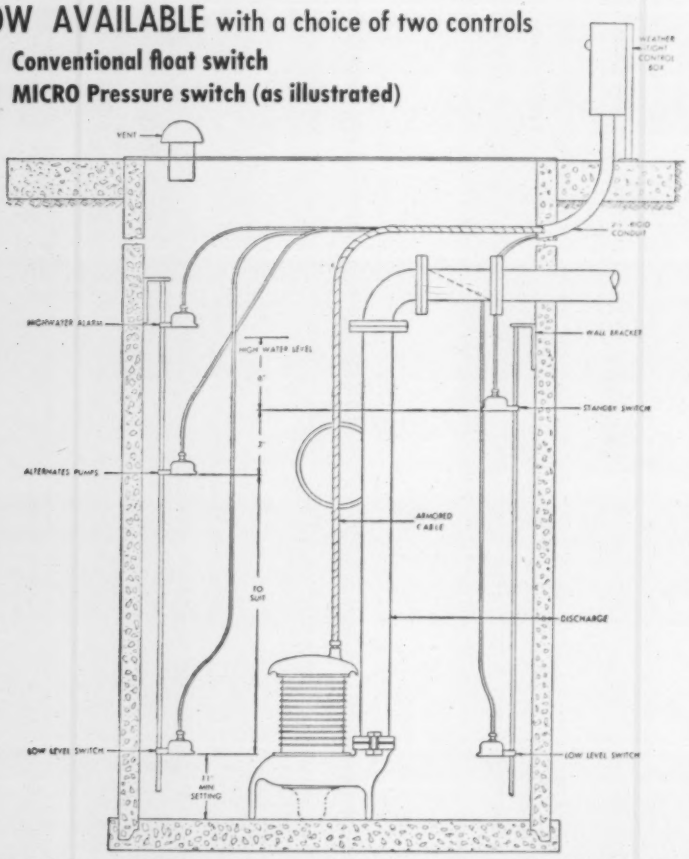
NOW AVAILABLE in a choice of two motors

1750 R.P.M. and Low Speed 1140 R.P.M. for longer life, less wear and improved non-clog characteristics.

NOW AVAILABLE with a choice of two controls

Conventional float switch

MICRO Pressure switch (as illustrated)



Illustrated is a Duplex Installation of two **weil** Submersible Sewage Pumps employing MICRO Switch controls to start and stop pumps; to alternate pumps; and to provide for high water alarm. Note the ease with which switches are positioned (or changed) to control water levels. The Submersible MICRO Switch has no exposed moving parts, needs no servicing and coupled with the **weil** Submersible Pump provides an extremely efficient non-clog trouble-free pumping system.

weil Submersible Pumps are manufactured in discharge sizes of 3" to 6" and capacities to 2000 G.P.M. There is a **weil** Submersible Pump to meet all requirements.

Send for Bulletin SE-860, SE 862 and SE 865 (505) for complete engineering information.

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Legal

Fraud in Contracts

Law permits cancellation even if fraud immaterial

Fraud renders a contract voidable even where the misrepresentation is not material. But if a misrepresentation is not made innocently, the contract is voidable only if the misrepresentation is material.

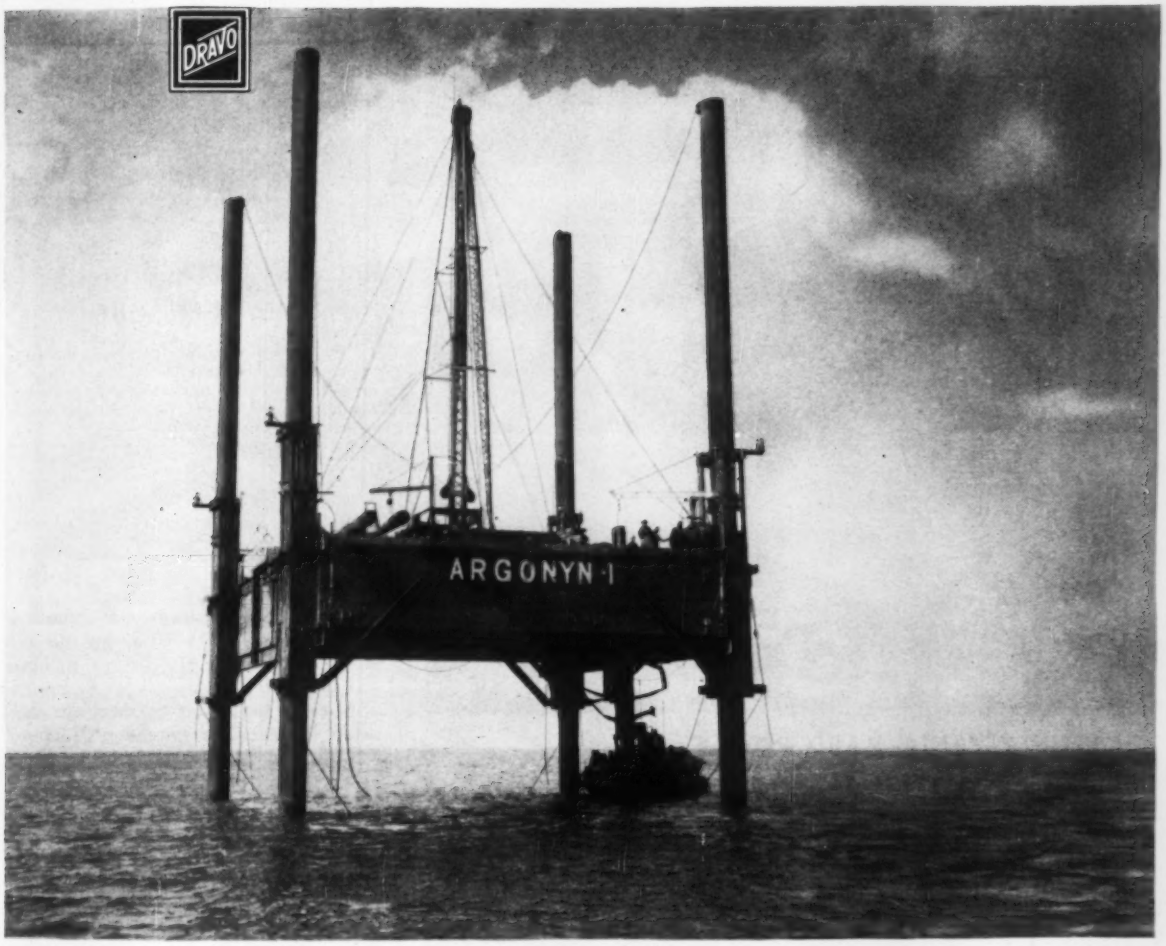
The difference is discussed in a Pennsylvania case that arose under these circumstances:

A party entered into a contract for the purchase of a dwelling which was being remodeled by the seller. The full contract price was paid and title was delivered. The buyer never occupied the house. He discovered that the kitchen floor was covered with termites and that there were other defects in the building. The buyer notified the seller that he rescinded the contract and demanded a return of the purchase price.

Before entering into the contract to purchase the building, the buyer examined the building with the seller. The buyer asked the seller about the joists of the ground floor, which were obscured by many things, and the seller said that "they are as good as new." The buyer also made inquiries as to the condition of the roof and was told that it has been replaced four years ago and did not leak. A few days after the purchase price was paid in full, the buyer discovered that the joists had been completely ravaged by termites and provided inadequate support for the floor above and that the roof leaked. The seller was fully aware of these defects at the time he made the false representations.

Upon the refusal of the seller to return the purchase price, the buyer brought an action to rescind the transaction and for a return of the purchase price and obtained a judgment which was affirmed on appeal.[1]

The appellate court stated: "Where a party is induced to enter into a transaction with another by means of the latter's fraud or material misrepresentation, such a transaction can be avoided by the innocent party. Fraud arises where the misrepresentation is knowingly false, where there is a concealment calculated to deceive, or where there is a non-privileged failure to disclose. Fraud renders a transaction voidable even where the misrepresentation is not material; on the other hand, a misrepresentation made innocently is not actionable unless it is material, and in such case there must be a right to reliance. A misrepresentation is material when it



First Offshore Drilling Platform on U. S. Side of Lake Erie Built by Dravo

The first offshore gas well on the American side of Lake Erie is being drilled by New York State Natural Gas Corporation. Operations are underway, near Conneaut, Ohio, from a new mobile rig built by Dravo.

The "Argonyn-1" will work in 30 to 60 feet of water and can be towed easily from one site to another. Of welded pontoon construction, it is 50 feet square. At each location, the 130-foot-long legs are driven firmly into the lake bottom and the platform is hoisted by dual hydraulic jacks on each leg.

Dravo's wide experience on construction jobs "in or around water" can help you realize genuine economies on such projects. For information on this or the other products and services pictured below, write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

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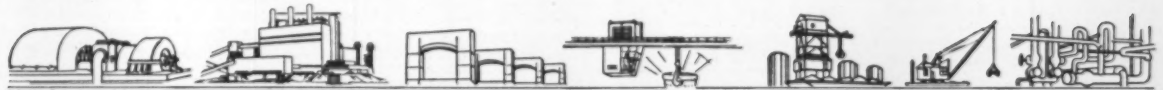
CORPORATION



Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping

foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

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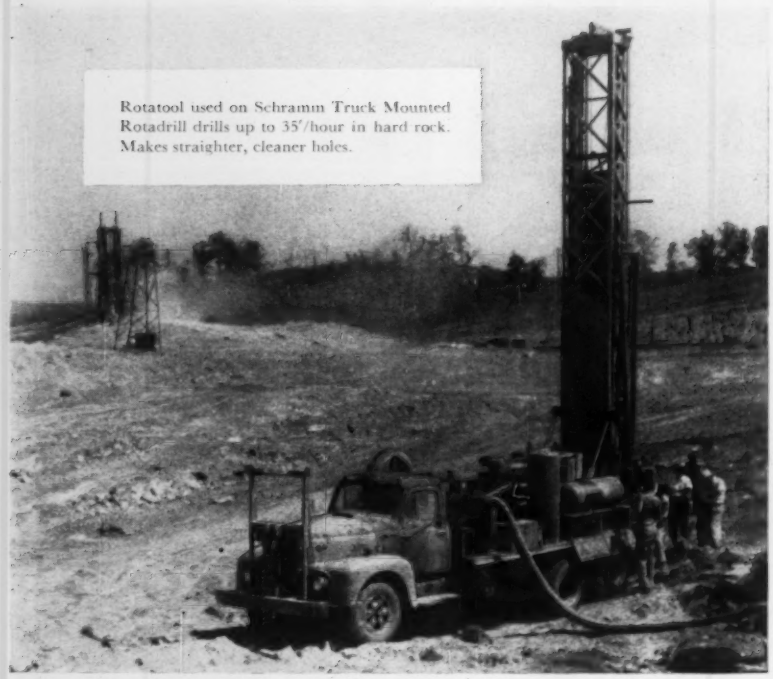


Rotatool used on Schramm Truck Mounted Rotadrill drills up to 35'/hour in hard rock. Makes straighter, cleaner holes.

IN PENNSYLVANIA HARD ROCK . . . *

Rotatool drills 50% faster

Here's the fastest-drilling tool you've ever seen for making hole. In Pennsylvania hard rock rates up to 35 feet per hour are achieved with the Schramm Rotatool for bottom-hole drilling—an increase of 50% over old methods. Average rates vary from 15-20 feet per hour in trap rock and 25-30 feet in hard limestone. Reason: Rotatool combines the crushing power of a rock drill with the speed and efficiency of a rotary drill to give you a bottom-hole percussion tool to produce maximum fracturing action.

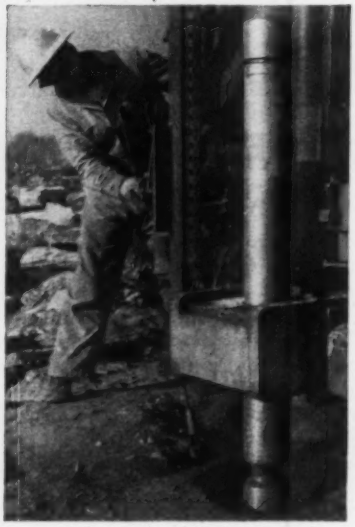
Rotatools are available in two sizes: The larger, for Truck and Crawler Mounted Rotadrills, takes 6" and 6½" bits and requires 350 cfm of air @ 100 psi. The smaller, for Pneumatractor Mounted Rotadrills, takes a 4½" bit and requires 100 cfm @ 100 psi.

Heavier hammer delivers more crushing energy per blow for better breakage, faster penetration.

Impact delivered to the bit—none lost through drill pipe. Makes fast, deep holes where many drills are stopped.

Full information about the Schramm Rotatool is contained in the New Bulletin SRT-58. Write for your copy today.

See the Yellow Pages for local Sales, Service and Rental of Schramm Air Compressors.



Rotatool for bottom-hole drilling fits all Schramm Rotadrills—Truck, Crawler or Pneumatractor mounted without affecting their uses as rotary drill.

*Actual Drilling Rates in Pennsylvania Hard Rock	
Churn Drill	20'—30' per day
Competitive Rotary Drill	20'—22' per hour
Schramm Rotadrill with Tri-cone Bit	22'—24' per hour
Schramm Rotadrill with Rotatool	30'—35' per hour

Schramm, Inc.

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is of such a character, that if it had not been made the transaction would not have been entered into. See Restatement on Contracts, 470, 471, 476." (1) De Joseph v. Zambelli, 139 A. 2d 644. Supreme Court of Pa., March 17, 1958.

Reliance on Condition Precedent Is Qualified

A builder who is not required to perform his contract until a specified event occurs is not relieved of his obligation to perform if he is the one who prevents the event from occurring.

This rule of law was applied in a recent New York case involving a contract for the construction of a house, which was to be conveyed, together with the land, if and when the purchaser obtained a GI mortgage.

Mortgage application was handled by the seller. The mortgage was turned down because the purchaser's income was too low.

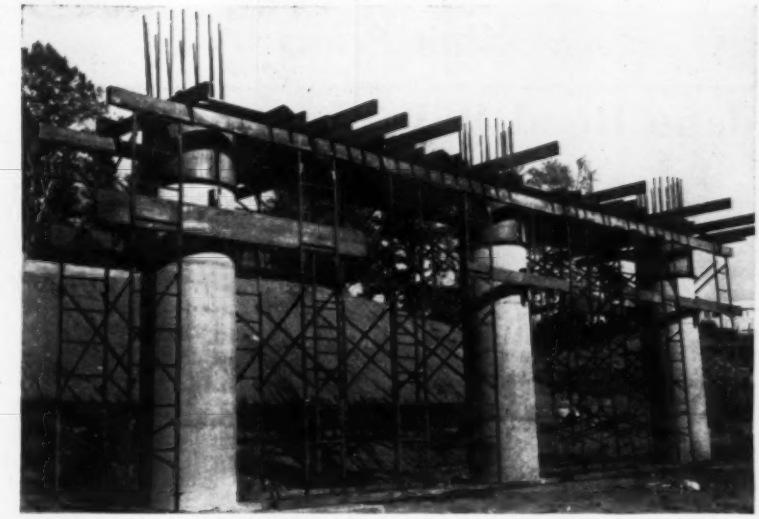
At the time the application was made, however, the purchaser's income was higher than listed on the application and, if properly disclosed, would have induced the bank to make the loan. The purchaser was not given the opportunity of showing the correct income figure.

The lower court dismissed a lawsuit brought against the seller by the purchaser. Reason for the dismissal was the purchaser's failure to qualify for the loan.

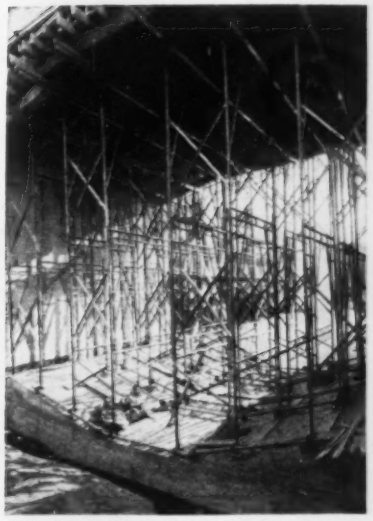
On appeal, the judgment was reversed and a new trial ordered because the evidence indicated the acts of the seller prevented the granting of the mortgage loan.

The appellate court held that the failure to grant the loan resulted from the failure on the part of the seller to give the buyer a chance to qualify for the loan at the time the application for the same was made. "A party to a contract may not insist upon a condition precedent where he himself has caused or brought about its non-performance." (1) Meyer v. Custom Manor Homes, 167 N.Y.S. 2d 112, N. Y. Supreme Court, Appellate Division, Fourth Department, Oct. 30, 1957.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

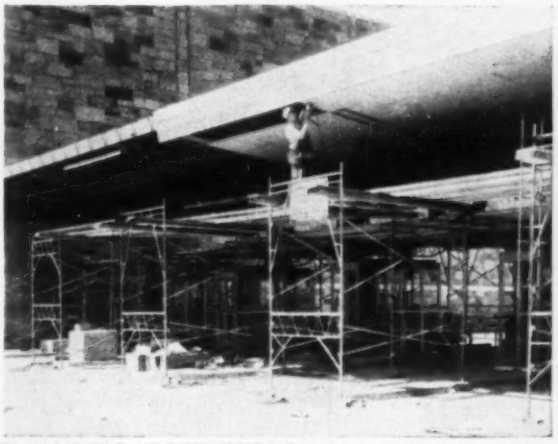


QUICK PIER BEAM SUPPORT—"Trouble Saver" 2'-wide Ladder Scaffold frames spaced 5' apart help contractor, M.D.A. Construction Co. provide easy access for forming work and support for one of 20 bridge piers on the Cross-Westchester Expressway, White Plains, N.Y. This photo shows forming and support for a pier beam 42" x 48" deep, 14' high. Many users of "Trouble Saver" Shoring say "its ease of handling means quicker job completion." Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that *sell* or *rent* "Gold Medal" Scaffolds.



CONFORMING TO CURVES—Guy F. Atkinson Co., contractor, uses "Trouble Saver" Shoring to support Pacific Electric Ry. Co. concrete bridge, Los Angeles, over a sloped concrete channel base. Adjustable legs help meet both curves, top and bottom. Note 4" steel I-beams as stringers, furnished by PS Co.

Shoring Methods . . . for Highway Construction by The Patent Scaffolding Co., Inc.



FINISHING OPERATIONS—On toll booths at the New Jersey Plaza for the New York—New Jersey Lincoln Tunnel these "Trouble Saver" fixed Scaffolds are used to provide safe, level platforms for finishing work. The scaffolding components used here are the same as those used for shoring operations. By assembling them in towers and spacing to take the load, practically any shoring job can be done.

EASILY HANDLED BRIDGE SHORING—5'-wide prefab "Trouble Saver" Sectional Steel Shoring frames are handled easily by the crew for T. M. Page and RCT Corp., joint venturers, to obtain the correct support for the Cajon Blvd. Bridge over Devil's Creek Diversion Channel, San Bernadino, Calif. Two 6'6"-high frames, with extension legs, give 14' height. 4" steel I-beams used as stringers. 3'7" spacing between frames.

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THE PATENT SCAFFOLDING CO., Inc.

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To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

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(Predraining Problem)

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(Skilled Wellpoint Engineering)

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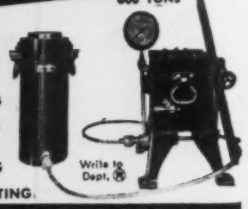


RICHARD DUDGEON INC.
799 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

Idaho Road Pulls Sixteen Bids

Low excavation price wins contract for overpasses, underpasses and 4-lane divided Interstate highway

Cherf Bros., Sankay Bros., Inc., Euphrata, Wash., got this contract at $1,537,360 on their low bid of 29¢ a cu yd on 759,500 yd of unclassified excavation. This accounts for over 14% of the total contract. Other bids on this item ranged from 38¢ to 62.8¢ per cu yd.

Work includes two overpasses, two underpasses and a 4-lane divided highway for this Interstate highway job on US 30N at American Falls, Idaho, for the Idaho State Highway Dept. Chas. Aldrich is district engineer at Pocatello, Idaho.

The two concrete underpasses are each 245 ft long; the concrete overpasses are 26.5 ft and 108 ft, respectively, and the 4-lane divided highway, with bituminous surface treatment, is 4.464 miles long.

In addition to furnishing all materials, the contractor must supply 5,000 tons of crushed gravel in stockpiles.

Class A concrete is specified 3,000 lb compressive strength in 28 days.

Union scale wages paid on the job include: tractor operator, $2.96; shovel and crane operator, $3.11; power-roller operator, $2.56; concrete finisher, $2.975; carpenter, $2.875; truck driver, $2.45, and common laborer, $2.32.

1C Cherf Bros., Sankay Bros., Inc, Euphrata, Wash $1,537,360
2 Fred H. Slate Co., Portland, Ore 1,705,996
16 Kiley Constr. Co., Butte, Mont 2,171,602

Bids: 4-15-58 Items	Unit	Quantity	Unit Prices 1C	2
Fence, remov	lf	14,400	$0.05	$0.04
Conc headwall, remov	ea	2	60.00	100.00
Excavation, uncl	cy	759,500	0.29	0.43
structural	cy	1,755	0.60	3.00
	cy	1,850	1.50	3.00
Borrow	cy	685,000	0.185	0.31
selected, cl A	cy	41,000	0.22	0.38
Haul	yu	619,000	0.31	0.30
Foundation compaction	unit	3,875	0.01	0.01
Watering	Mgal	65,000	1.00	0.01
Roll, power roller	hr	2,520	9.00	10.00
pneu tire roller	hr	2,520	9.00	10.00
Tamp, mechanical	cy	5,850	3.30	2.25
Ditches, small	lf	1,700	0.17	0.15
Old road, cl 2, oblit	sta	20	11.00	25.00
Matl deposits, strip	cy	55,000	0.23	0.22
Base crse, cr gr, 2" max	t	124,500	1.55	1.38
tp B, 3½" max	t	87,000	1.70	1.58
Cr gr surf in stkpl, 3¢" max	t	5,000	0.85	2.00
Asph rd matl for BST, tp C, MC-2	gal	127,000	0.20	0.20
MC-5	gal	95,500	0.20	0.18
tp B, MC-1 raised med & sign isles	gal	950	0.30	1.00
MC-5, raised med	gal	650	0.30	1.00
Cv ct matl for Bst, tp C, cl 6	t	6,400	3.00	4.23
tp C, cl 2	t	4,800	4.30	4.23
tp B, cl 5, raised median	t	35	11.00	20.00
Conc, cl A-A, prestress strgrs	cy	213	76.00	90.00
precast strgrs	cy	230	50.00	100.00
cast in place	cy	1,721	54.00	70.00
cl C	cy	20	45.00	25.00
Metal reinforcement	lb	330,700	0.14	0.15
Steel, structural	lb	17,050	0.28	0.40
bm handrail for conc struct	lf	500	4.50	7.00
handrail for conc struct	lf	970	7.80	12.00
Timber piles, treated, furn	lf	1,825	$1.80	$2.50
drive	lf	1,755	1.60	2.50
Test piles, drive	lf	70	9.80	5.00
Pipe culv, tp A, 12"	lf	530	2.80	2.85
tp B or F, 22"x13"	lf	135	4.80	4.30
29"x18"	lf	60	7.00	7.10
tp F, 12"	lf	480	4.00	4.05
18"	lf	1,820	5.00	6.10
24"	lf	2,140	8.00	8.00
tp G, 24"	lf	685	8.50	8.50
Corr pl pipe, 12 ga, 5'8"x6'6"	lf	75	42.00	45.00
7 ga, 84"	lf	500	59.00	60.00
Conc pipe siphon, 18"	lf	740	6.80	7.50
Drop inlet, tp 2	ea	5	120.00	150.00
tp 3, mod	ea	6	94.00	175.00
Riprap, hand placed	cy	20	12.00	25.00
Conc curb, tp C, mod	lf	3,450	1.40	1.80
Guard rail, stl beam type	lf	18,350	2.75	2.44
Guide posts, tp 4	ea	255	4.80	5.10
plates, type 5	ea	160	2.20	3.00
Del & posts, single type 6	ea	50	9.00	6.70
double type 7	ea	110	9.50	7.50
Fence, wire tp 1-B	lf	22,300	0.25	0.25
tp 3-B mod	lf	51,500	0.40	0.38
10' center-center	lf	1,450	0.44	0.41
Steel gates, 4'	ea	1	45.00	42.00
10'	ea	36	47.00	41.50
12'	ea	2	50.00	45.00
14'	ea	4	55.00	50.00
Cr grav footpath	sy	95	35.00	1.00
Backfill, special cl A	cy	345	3.00	2.00
Right of way marker	ea	110	7.00	7.15
Corr met emb protectors, 18"	ea	15	31.00	75.00
Bituminous, curb, plantmix	lf	8,500	1.15	1.05
Cattle guards	ea	8	1,900	1,400
Borrow for med drain, special	cy	60	4.50	1.00
Ct mech jt, cl 150, 12"	lf	440	11.00	10.00
Fence, move & reconstruct	lf	1,620	0.21	0.24
Concrete apron, remov	sy	50	0.57	1.00
Wood stave WP, 10" remov	lf	485	0.28	0.35
Curb nose, precast, tp A	ea	4	17.00	30.00
Prestress reinf & prestresng	ls	job	10,475	17,500
Ramp med strip, chem steril	ls	job	450.00	1,000
Underground conduit instal	ls	job	2,400	1,700
Sign posts, grd mtd, spec, erect	ls	job	13,300	11,632

Complete: 10-15-59 Liquidated damages: $500/day
BST Bit surf treatment

Wisconsin Water Mains

This $18,797 contract to R. V. Huston, Stoughton, Wis., includes the laying in Janesville, Wis., of 14,128 lin ft of cast iron water main furnished by city. J. Lustig is city engineer. Average depth of the mains is 6 ft, 99% being dry work. Minimum wages on the job range from $3.50± for skilled, through $3.00± for semi-skilled, to $2.44 for common laborers.

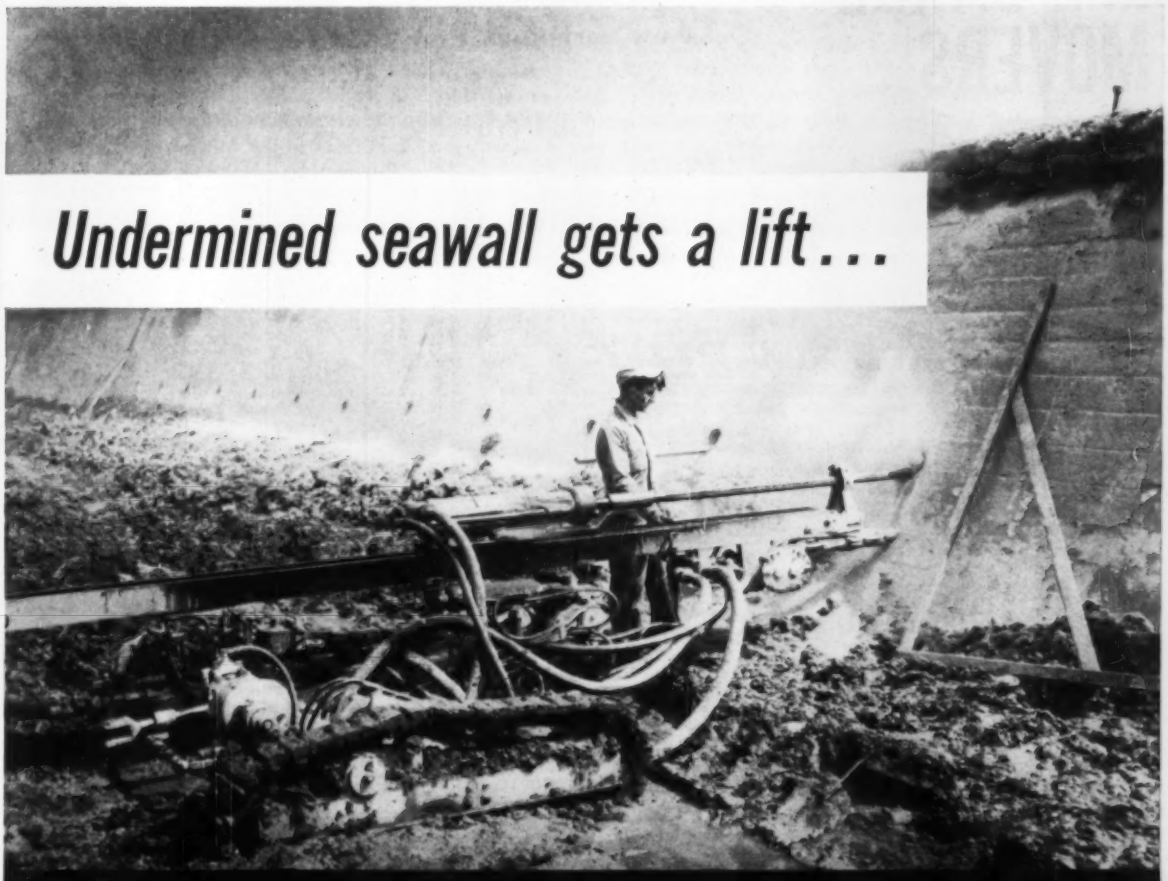
1C R. V. Huston, Stoughton, Wis $18,797
2 J. K. Walsh, Inc., Madison, Wis 22,689
6 Bahr Constr. Co., Manitowoc, Wis 29,137
EE Roger Krempel, City Engineer, Janesville, Wis. 20,000

Bids: 5-23-58 Items	Unit	Quantity	Unit Prices 1C	2
CIP, 6" lay	lf	5,024	$0.89	$1.30
8" lay	lf	8,347	1.24	1.40
10" lay	lf	655	1.58	1.60
12" lay	lf	102	5.00	1.80
Valve manhole	ea	18	105.00	150.00
Hydrants, set	ea	18	30.00	30.00
Add for possible extras:				
Sand or gravel, in place	cy		2.60	3.00
Cement, in place	cy		30.00	35.00
Timber sheathing left in	M		250.00	300.00
To price per ft of laying pipe, for laying offset	lf		3.50	1.00
Excavation, rock	cy		20.00	28.00
Deduct for:				
Poss elmin flushing ditches with water, per 100' sta	sta		8.00	5.00

Commence: 7-1-58. Compl 120 cal days. Liq dam $10/day

(Unit Prices continued on page 84)

J. Kennon Perrin Co. was awarded the contract for a major seawall overhaul in Richmond, Va. Old seawall undermined by James River will be supported by steel rods anchored in a new wall being built behind it. An INA performance bond stands back of the job.



Undermined seawall gets a lift...

bonded economically with INA's extra value

Contracts are obtained with bids which take advantage of every saving in cost.

The contractor on this seawall job provided a performance bond with INA as surety to take advantage of INA's well-known *extra value*.

The coverage was worked out by an INA independent agent, taking advantage of minimum rates.*

Prompt handling, tremendous resources and broad experience in bonding are extra values which count heavily when you get down to the fine points. It may pay you to call your nearest INA agent before working up your next bid. He's as cost-conscious as you are.

*Sorry, not available in Louisiana and Texas

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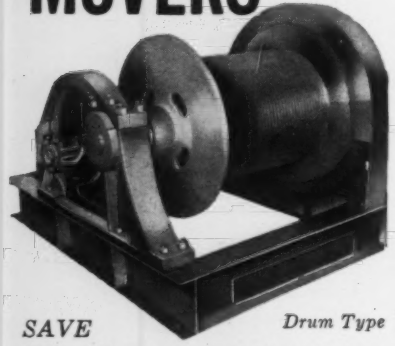

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Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY
Anyone can operate it. The hammer principle eliminates any special skill requirements.

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The enclosed cutting blade locked in the body of the cutter assures perfect safety.

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Models for tool kit or stationary operation. Made in three sizes.

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Bid Price Trends in Wisconsin

Highway contract price trends for selected items show variations over four year period

	Unit	Average Unit Price 1954	1955	1956	1957
Clear	sta	$37.69	$38.77	$43.23	$41.34
	ac	201.41	212.68	196.68	258.59
Grub	sta	30.68	28.12	43.48	40.94
Conc pavement, rural r	sy	0.42	0.54	0.58	0.53
urban r	sy	0.90	1.10	0.94	0.80
Curb r	lf	0.49	0.29	0.33	0.49
& gutter r	lf	0.37	0.44	0.47	0.41
Conc sidewalk r	sy	0.72	0.95	0.80	0.68
Excavation, common	cy	0.36	0.56	0.41	0.32
rock	cy	0.59	0.81	0.96	0.64
marsh	cy	0.24	0.28	0.36	0.28
uncl, rural	cy	0.32	0.41	0.42	0.36
urban	cy	0.67	0.53	0.53	0.73
struct, bridges	cy	7.82	8.21	7.26	6.53
culverts	cy	4.23	4.21	4.91	4.24
Borrow exc rural	cy	0.38	0.51	0.51	0.47
urban	cy	0.72		1.45	0.52
Old road, obliterate	sta	20.43	21.99	24.24	22.69
Subbase, granular	cy	0.62	0.82	0.76	0.57
Conc base course, 7"	sy	2.85	3.60	3.37	3.87
8"	sy	2.74	3.29	4.19	4.27
9"	sy	4.20	4.11	5.42	4.43
Base course, gravel	cy	1.27	1.24	1.71	1.64
	t	0.76	1.01	1.19	0.99
cr stone	cy	1.82	1.94	2.36	2.14
	t	2.14	1.50	1.55	1.47
traf bound	cy	1.34	1.70	1.67	1.44
Conc pave, 9", rural	sy	3.02	3.42	3.67	3.35
urban	sy	3.78	4.50	4.40	4.37
10"	sy			4.95	5.78
reinforcement	sy			0.56	0.56
Bit surf, prep for roadbed	sta	6.64	7.21	7.23	5.70
matl for prime coat	gal	0.16	0.16	0.18	0.18
surf crse, rural	t	24.60	28.07	32.09	32.90
surf pit mix, single agg, rural	t	3.97	3.67	4.45	3.84
urban	t	7.97	5.75	5.83	6.19
conc pave, rural	t	3.83	4.10	4.81	4.07
urban	t	6.22	7.24	7.73	7.18
Conc masonry, bri, rural	cy	54.92	56.10	64.95	63.25
urban	cy	49.81	58.20	64.98	63.00
culv, rural	cy	51.65	54.57	61.48	57.09
Stl, bar reinf, bri	lb	0.10	0.11	0.13	0.12
culv	lb	0.11	0.12	0.13	0.13
Stl, struct carbon	lb	0.15	0.19	0.21	0.22
Sheet lead	lb	0.50	0.58	0.66	0.55
zinc	lb	0.65	0.75	0.80	0.73
Lumber & timber, treated	Mbm	359.85	488.97	479.15	497.29
Masonry, mortar rubble	cy	24.51	26.87	29.69	30.00
Culvert pipe, 18"	lf	2.95	3.52	3.59	3.64
24"	lf	4.70	5.01	5.46	5.54
30"	lf	6.19	6.60	6.84	7.14
36"	lf	8.97	9.86	10.56	10.81
42"	lf	10.62	11.75	12.94	14.06
48"	lf	13.40	14.45	14.56	16.55
54"	lf		16.49	20.32	18.67
60"	lf	22.55	23.09	25.12	25.33
72"	lf	28.34	30.46	31.36	31.81
RC culv pipe, 18"	lf	2.90	3.52	3.59	4.06
24"	lf	4.74	5.01	5.46	6.17
30"	lf	5.77	6.60	6.84	8.42
36"	lf	9.28	9.86	10.56	11.94
42"	lf	11.20	11.75	12.94	15.36
48"	lf	13.15	14.45	14.56	19.24
60"	lf	19.98	23.09	25.12	29.86
72"	lf	29.04	30.46	31.36	35.35

	Unit	Average Unit Price 1954	1955	1956	1957
Corr galv sht met culv pipe, 18"	lf	3.27	3.72	3.85	3.80
24"	lf	4.97	5.48	5.84	5.86
30"	lf	8.14	7.27	7.32	8.00
36"	lf	9.37	9.41	11.95	11.46
42"	lf	20.00		13.27	16.84
48"	lf	13.60	13.00	15.00	16.00
60"	lf	23.76		32.00	25.00
72"	lf	30.00	29.50	31.00	30.34
CMP arch, 18"x11"	lf	4.50		4.50	4.59
22"x13"	lf	4.03	4.84	4.49	6.03
25"x16"	lf			4.98	5.23
29"x18"	lf	6.23	6.19	6.87	7.13
36"x22"	lf	7.64	7.91	9.25	8.34
43"x27"	lf	11.50	12.24	12.36	12.32
50"x31"	lf	14.01	14.42	14.09	13.52
58"x36"	lf	18.00	16.51	15.73	16.95
65"x40"	lf	17.28	20.97	22.60	21.17
72"x44"	lf	27.43	27.78	24.33	27.46
Pipe cattle pass	lf	27.87	28.38	31.32	31.50
Struct pl pipe arch, 8'	lf	46.00	62.37	50.92	43.48
9'	lf		56.42	60.38	60.00
10'	lf	50.05	62.62	68.86	60.00
11'	lf	53.00	80.00	60.00	75.00
12'	lf		67.34	71.58	80.00
13'	lf		78.26		120.00
14'	lf			75.00	80.00
15'	lf		88.50		86.25
Piles, untr timb del	lf	1.26	1.43	1.70	1.81
dr	lf	0.65	0.56	0.55	0.71
treated timb del	lf	1.82	2.04	2.36	2.42
dr	lf	0.95	0.73	0.59	0.55
shoes	ea	7.40	8.70	8.20	7.75
steel del	lf	3.31	4.48	5.88	3.80
dr	lf	1.00	0.95	1.05	0.93
conc, cip del	lf	6.35	6.75	6.60	7.02
dr	lf	1.26	1.20	1.84	1.24
Galv stl conduit, 3"	lf	3.00	2.00	2.47	2.72
Fiber duct, 3"	lf	2.11	1.84	2.44	2.17
Floor drains	ea	31.86	36.89	45.54	47.30
Pipe rail w/pipe posts	lf	2.86	7.42	8.75	9.30
Riprap	cy	8.82	10.82	11.37	10.46
heavy	cy	6.24	7.26	8.16	7.31
grouted	cy	22.73	23.42	19.64	33.83
Slope pave, grtd rubble	sy	5.18	4.97	5.54	5.63
Pipe underdrain, 6"	lf	1.57	2.59	2.17	1.77
8"	lf	3.00	3.00	3.24	3.21
12"	lf	2.63		4.65	4.19
RCCP storm sewer, 12"	lf	3.70	6.63	5.88	6.38
15"	lf	3.91	5.81	5.88	6.39
18"	lf	4.94	6.65	6.66	10.00
24"	lf	4.97	5.48	5.84	11.22
30"	lf	8.00	10.81	11.12	15.31
Conc curb	lf	1.55	1.45	1.90	1.87
& gutter, 30"	lf	2.12	2.25	2.40	2.46
sidewalk	sf	0.45	0.46	0.49	0.45
Gd fence, cable	lf	1.70	1.89	2.10	1.91
anchors for	ea	45.24	47.78	54.65	57.01
stl plate beam	lf	2.55	2.55	2.88	2.81
Marker posts	ea	4.59	4.95	5.03	4.87
Surf treat, $CaCl_2$	t	45.58	48.79	54.00	52.07
Topsoil	sy	0.11	0.20	0.16	0.17
salvaged	sy	0.08	0.11	0.10	0.10
Straw mulch	sy	0.043	0.05	0.05	0.05
Fertilizer	cwt	3.91	4.64	4.59	5.17
Seeding	sy	0.013	0.016	0.016	0.016
Sodding	sy	0.58	0.65	0.70	0.55

r—remove

Erosion Control and Channel Relocation

This $38,717 award to King Engineers, Riverton, Wyo. is for erosion control and channel relocations along Fivemile and Muddy Creeks, for the Missouri River Basin Project, Riverton, Wyo. It is 0.5 miles of channel excavation, earthworks and structures for the Bureau of Reclamation, Dept. of Interior at Riverton. R. C. Van Drew is project manager.

The contract, almost 39% below the engineer's estimate, calls for fabrication and installation of 1,000 timber jacks and 110 timber half jacks, 3,800 lin ft of rock-filled groins and 2,000 lin ft of brush-filled groins. The Bureau furnishes the timber, rock and brush.

Wages range from $2.85 for skilled, through $2.25 for semi-skilled, to $1.75 for common laborers.

1C	King Engineers, Riverton, Wyo	$38,717
2	Nicks Constr Co., Riverton, Wyo	43,546
5	Sharrock & Pursel, Casper, Wyo	94,625
EE	Bureau of Reclamation, Dept. of Interior, Riverton, Wyo	63,370

Bids: 4-17-58 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, channel	cy	4,000	$0.24	$0.35
& bkfl, trench	cy	2,700	0.94	2.00
Timber jacks	ea	1,000	11.20	11.75
half jacks	ea	110	8.90	7.00
Groins, rock-filled	lf	3,800	4.80	5.07
brush-filled	lf	2,000	2.40	2.48

Commence: 4-30-58 Complete: 240 cal days
Liquidated damages: $25/day

CLEAN WINDOWS *the Fast, Efficient*
CLEVELAND TRAMRAIL WAY

MODERN buildings not only have more and larger windows than ever before, but because of air-conditioning, they are often non-opening. This necessitates providing some means for reaching them when washing the outsides, and sometimes for the insides also.

Even where provision is made for reaching the outside of a window from the inside, this usually is not desirable when a building is air-conditioned. Open windows quickly unbalance an air-conditioning system, in warm weather and, of course, are undesirable in cold weather.

Cleveland Tramrail Window Washing Equipment offers a solution to the problem. It enables a man to reach every window quickly and wash them with complete safety. In addition, it facilitates other outside building maintenance such as pointing up, painting, minor repairs. The equipment is available for hand or electric operation.

Write us for free illustrated booklet No. 2022 giving details.

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This modern glass-walled office lobby in the super-modern office building of Aluminum Company of America in downtown Pittsburgh is 4½ stories high. Cleveland Tramrail track circles the lobby both outside and inside. A motor-driven carrier and electric hoist is provided for each track loop. When a cage is attached to a carrier, a window washer can position himself at any part of a window by operating the simple hoist and travel controls.

Washing windows on the inside of the lobby. The same cage is used both outside and inside.

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Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Jul. 17; Next, Aug. 14
- Wood Products, Glass, Explosives, Chemicals: Last, Jul. 24; Next, Aug. 21
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jul. 31; Next, Aug. 28
- Wage Rates, Building Board, Lath, Insulation: Last, Jul. 31; Next, Aug. 28

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.," truckload del.," per block		CONCRETE Ready Mixed 1:2:4 del. 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ In.	Gravel, ¾ In.	Sand	1½ In.	¾ In.	1½ In.	¾ In.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.35am	$3.95am	$3.60m	$3.10	$3.10	$2.50‡	$2.18	$2.33	$1.65	$1.75	$0.175	$ .21	$14.50g
Baltimore	3.90a	3.80a	3.32a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	18a	18a	13.10-13.60
Birmingham	4.23	3.30f	.....	2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	18	18	12.55
Boston	5.80ei	4.59a	4.67e	3.00am	3.00am	3.00am	1.75am	1.85am	.....	.....	23	275a	15.00h
Chicago	4.13ag	3.87a	3.90/3.95	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	25	256	13.50
Cincinnati	4.70c	4.18c	4.20c	2.29‡c	2.34‡c	2.34‡c	2.64‡c	2.64‡c	1.89	1.89	.19	.24a	13.25
Cleveland	N.A. in C.L.	.....	3.90c	2.25ef	2.10f	1.75	4.50‡a	4.50‡a	3.45‡a	3.45‡a	.....	22	14.65
Dallas	3.75a	3.25a	3.63	2.65	2.70	1.90	2.43	2.63	.....	.....	.....	27	12.00
Denver	4.79a	4.20a	4.79	1.90	2.05	1.20‡b	.....	.....	.....	.....	.22	245a	10.70
Detroit	4.25a	3.75ag	3.72ag	4.50‡b	4.50‡b	4.25	3.75‡	3.75‡	3.50‡	3.50‡	.24	27a	14.40
Kansas City	4.23a	3.83a	4.10a	.....	.....	1.70‡a	2.00‡a	2.00‡a	.....	.....	22a	26c	13.50
Los Angeles	5.12ch	4.68ch	5.00	2.56‡a	2.76‡a	2.41‡a	2.41‡a	2.46‡a	.....	.....	17fm	285m	12.90ik
Minneapolis	4.44a	4.04a	4.10a	2.70‡ag	2.70‡ag	1.60‡ag	3.75‡g	3.75‡ag	.....	.....	19	.....	14.30f
Montreal	3.36d	3.11d	3.72	1.90‡a	2.15‡a	2.40‡a	1.90‡i	2.15‡i	2.00	2.00	20	28a	10.80ek
New Orleans	4.06a	3.65g	3.85	2.45	2.45	2.09	.....	.....	1.45	1.65	275	.....	14.00
New York	4.83a	4.42a	3.72	3.20bk	3.20bk	2.30bk	3.100bl	3.10bl	.....	.....	.235m	.270b	17.40an
Philadelphia	4.57‡a	4.16‡a	3.61‡	2.85‡a	2.85‡a	2.35‡a	2.70‡	2.80‡	2.00	2.35	.25-.32	.....	14.15do
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.60aq	2.60aq	3.00aq	2.00e	2.00e	2.20	2.20	26	28	15.80
St. Louis	4.16/4.48e	3.76/4.08c	3.86/4.18	3.25am	3.10am	2.40/3.10am	1.65j	1.75j	.....	.....	24	30c	12.65-13.15
San Francisco	4.09c	3.69c	4.53c	2.02	2.02	2.12	2.17	2.17	.....	.....	.24	28cf	13.00c
Seattle	4.22a	3.70a	4.40a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	.....	.....	26	37c	13.90g
Toronto	4.00a	3.84a	4.00a	2.40‡	2.40‡	2.05‡	2.20	2.20	2.20	2.20	.26	.275c	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: •a Less 10¢ disc. 15 days. •b Less 2% disc. 15 days. •c Less 10¢ disc. 10 days. •d Truckload lots, deliv. 10¢ disc. 20 days. •e Truckload lots •f Fob mill, add 14.58 to $21.31 per car switching charges •g fob mill + freight •h LCL. •i Less 2% disc. 10 days •j Truck lots, fob yard •k 100 bag lots •l over 150 sacks •m Incl. 4¢ Ga. frt. Increase

SAND GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons or more. •e ½". •f Pea gravel. •g Less 5% for cash. •h Less than 5 tons. •i Plus 5% mun. & prov. tax •j F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •q fob yard

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocret, •e 5¼ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •i F.o.b. plant San Rafael •m F.o.b. yard. •n 8 x 8 x 18.

READY MIXED CONCRETE: •a 5 cu. yds. or over del. Man. •b 25 cu. yds or more. •c 10-100 cy. brackets. •d 1-3 mi. zone. •e 2,000 lb comp. •f 2,500 lb. comp. •g Less 25¢ disc. 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 5% mun. & prov. •l 1:2½:3½. •m F.o.b. yard. •n Plus escalator clause. •o Add 15¢ for ea. add'l 1-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for paymen within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal,

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45†	Buffington, Ind	$3.40†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.45†	Toledo, O	$3.45†
Clinchfield, Ga	3.45†	Independence, Kan	3.25†	Leeds, Ala	3.30†	Saginaw, Mich	3.45†	Milwaukee, Wis	3.50†
Kingsport, Tenn	3.45†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.45†	Green Bay, Wis	3.50†
West Des Moines, Iowa	3.50†	Northampton, Pa	3.35†	Hudson, N. Y.	3.35†	Buffalo, N. Y	3.55†	Ironton, O	3.45†
Nazareth, Pa	3.35†	Universal, Pa	3.60†	Alpena, Mich	3.35†	Oswego, N. Y	3.60†	Montreal City	2.56†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.45†	Cleveland, O	3.50†	W. Winfield, Pa	3.60†
Lesley, Pa	3.35†	Glant, S. C	3.45†	Howes Cave, N. Y	3.35†	Alsen, N. Y.	3.35†	Security, Md	3.35†

† *Prices to hold for first quarter of* 1958.

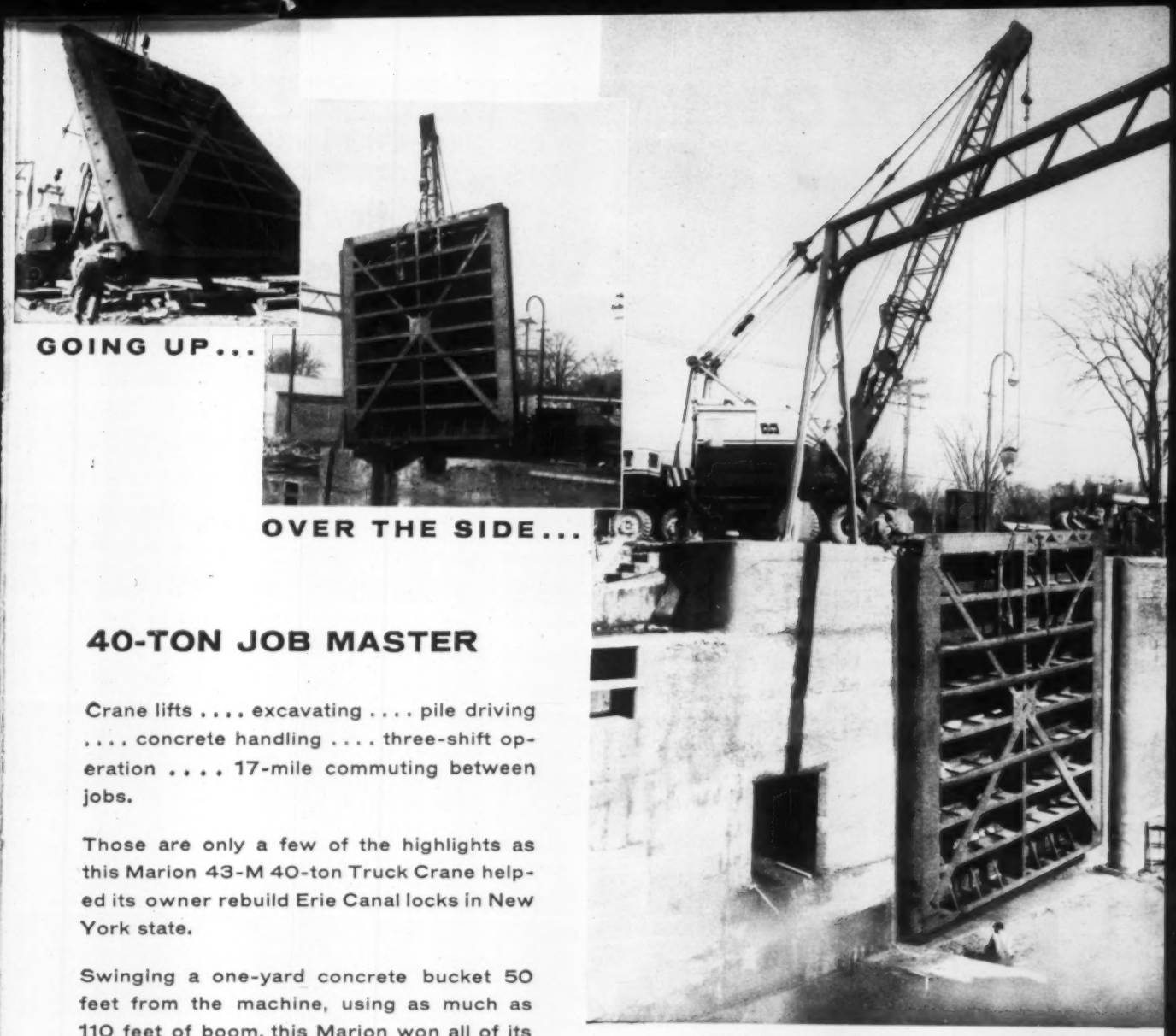
PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	.....	.....	.....	$30.50	$45.00	$0.15	$0.26	$0.125Pw	$0.28Pw	$0.14	$0.125	$0.30
Baltimore	150.00‡	.....	.....	23.00i	•.....	.095i	0.185i	.10weE	.19weE	.10i	.105i	0.195i
Birmingham	.....	66.00i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00ap	46.00ap	.22a	.46a	.105aFw	.24aFw	.105ao	.174aGo	.235aGo
Chicago	150.00‡	90.00‡b	3.95/4.00‡j	21.20b	31.20b	20.40bv	30.40bv	.975bwH	.1775bwH	.080b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	.....	89.50d	6.30g	25.00A	.....	25.00Av	.....	.1115AwF	.....	.....	.1180AG	.21AG
Dallas	e	40/78	e	26.30	45.30	.1116	.1944	29.85	51.40	.1080	.1116	.1944
Denver	.....	58.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	116.00	.....	33.05	.....	32.45v	.....	13.50I	.....	.1133	.....	.28
Kansas City	e	e	e	16.80cl	.....	16.80v	.....	.0825cwJ	.....	06c	0.125c	.....
Los Angeles	e	.....	e	22.50dmz	.....	22.50dnz	.....	24.00dz K	.....	23.00dv	.1038j	.2038j
Minneapolis	.....	.....	3.73h	26.00	.....	20.50v	.....	0.115w	.....	0.105	.125	.....
Montreal	e	e	e	32.50n	59.80n	.176n	.226n	18.70nwE	23.70nwE	.154n	.242ns	.27ns
New Orleans	.....	.....	.....	20.00e	.....o	20.00ev	.....e	.095ew	.....o	.085B	.095BL	.1905B
New York	.....	.....	3.50f	20.99m	42.94m	20.99nt	40.94nt	9.61uF	19.01uF	.....	9.68u	19.11u
Philadelphia	175/185	110/120	4.06	24.00	.....	24.00	.....	.11uF	.....	.105	.....	.....
Pittsburgh	60.00k	99.12ln	6.35	32.40i	.....	32.40iv	.....	.1411i	.....	.14‡	.1411i	.....
St. Louis	.....	.....	.....	19.74f	.....	1825	.....	.0893fwM	.....	0.165	825	.....
San Francisco	.....	70.00c	.....	24.50g	41.50g	24.50gkv	41.50gkv	24.50g N	43.00g N	25.25vg	25.50yv	.2063y
Seattle	.....	.....	.....	26.00z	41.00h	26.50z	.....	27.50 K	.....	25.25hv	24.50hv	46.10hrv
Toronto	.....	135.00	4.50f	40.10	59.38	0.2005	0.2445	0.214w	0.258w	0.198	0.216	.271

‡ Delivered.

PAVING BRICK & BLOCK: •b 3 x 3½ x 8. •c 2¼ x 8¼ x 4. •d LCL, truck deliveries. •e Not used. •f 2" interior 6# treat. •g 3". •h 2" tr, 8#. •i 3 x 3 x 8½. •j 2½", 6 lb. tr. •k Used. •l Redshale; •m Pine; oak $6.57. •n Truck del.

ASPHALTS: •a Price at plant, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segunda. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 penetr. •l Less than 100 penetr. •m 40/300 penetr. •n Fed. tax included; add 5% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60/70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150/300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks. •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS, SS. •H RC 0-5 incl. •I MC 4. •J MC, RC $0.095 •K MC 3,4,& 5. •L MS. •M MC 1-5, RC 1-5, $0.106. •N MC 3. •O Truckload. •P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums. •Q F.o.b. Eldorado, Ark.



GOING UP...

OVER THE SIDE...

JUST A LITTLE MORE!

40-TON JOB MASTER

Crane lifts .... excavating .... pile driving .... concrete handling .... three-shift operation .... 17-mile commuting between jobs.

Those are only a few of the highlights as this Marion 43-M 40-ton Truck Crane helped its owner rebuild Erie Canal locks in New York state.

Swinging a one-yard concrete bucket 50 feet from the machine, using as much as 110 feet of boom, this Marion won all of its multi-purpose job challenges with honors. Some of the lifts were so far above rated capacity we dare not print them.

Put this versatile, exciting job master on your projects—your nearest Marion Distributor has all of the facts.

You get **MORE** *with* **MARION**

TODAY'S MARIONS GIVE YOU MORE IN SUSTAINED, LOW COST PERFORMANCE

MACHINE	Shovel Capacity	AVAILABLE AS . .			
		Hoe	Crawler Crane	Truck Crane	Special Crane
35-M	¾	Yes	Yes	Yes	—
43-M	1	Yes	Yes	Yes	—
362	1½	Yes	Yes	—	Yes
93-M	2½	Yes	Yes	—	Yes
101-M	3	—	Yes	—	—
111-M	4	—	Yes	—	—

MARION POWER SHOVEL CO. • MARION, OHIO

A Division of Universal Marion Corporation

Send me information about MARION ..... yard shovels, ... yard hoes and ..... ton cranes (☐ crawler mounted ☐ truck mounted).

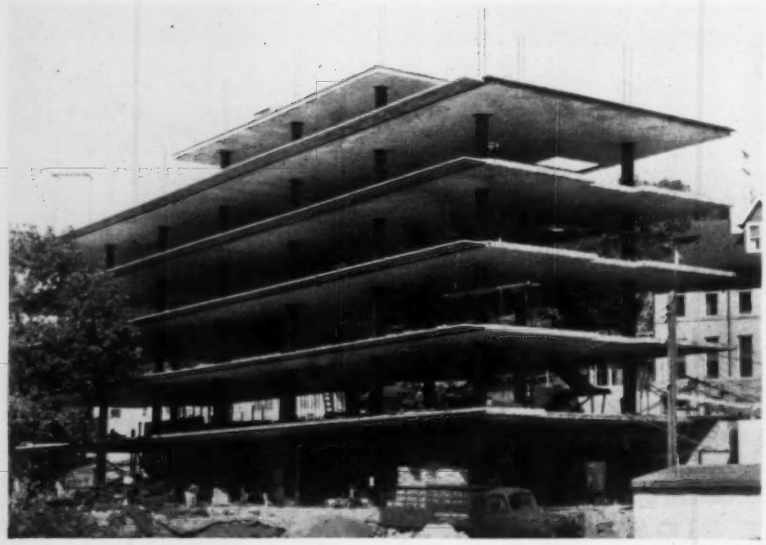
☐ Have a salesman call.

Name ..... Title .....

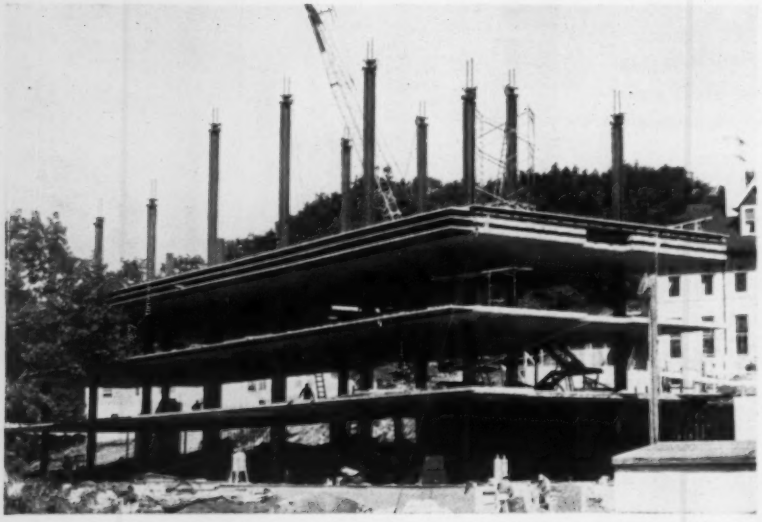
Company .....

Street .....

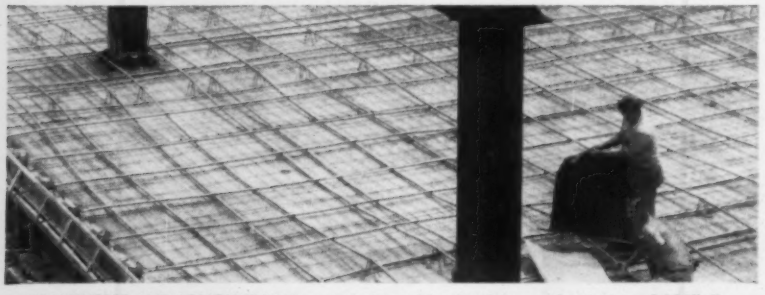
City ..... Zone ..... State .....



SIXTH SLAB IN PLACE: Guy wires attached to slab corners and anchored to concrete deadmen stabilized building during lifting operation. Sherwood, Mills and Smith, Stamford, Conn., architect; New England Lift Slab Corp., Boston, Mass., contractor. Concrete prestressing by A. F. Peaslee, Inc., Hartford; The Freyssinet Co., New York City, consultant; Marchant and Minges, West Hartford, Conn., structural and mechanical engineers.



FIRST STAGE LIFTING raised upper three slabs to tops of 35′ columns. Then, lower three floor slabs were raised to position. Next, columns were extended 25′, after which upper three slabs were raised to permanent position.



TRANSVERSE AND LONGITUDINAL prestressing cables for slabs consisted of ten 0.196″ dia. wires in 1-¼″ dia. flexible sheathing. Tendons are draped in vertical plane to vary prestress in floors and roof.

New low cost method raises 6-story lift slab

A NEW METHOD of pinning collars to the columns cut welding time and brought lifting cost down to 37 cents per sq. ft. in the 62′ high addition to Litchfield County Hospital, Winsted, Conn. Its 5 floors and roof are prestressed concrete lift slabs. After slabs were raised to correct height, 1¾″ pins were inserted through the column flanges and through 1¼″-thick shear blocks which were later welded to the inside of the flanges. Steel wedges, driven between the tops of the collars and the columns, provided a rigid connection. Finally, pinned shear plates were welded to the undersides of the collars. Column erection and lifting took 4½ weeks.

Concrete slabs were cast and prestressed at ground level. The five floor panels measured 182′ x 43′; the irregular shaped solarium roof, 80′ x 41′. All were 8½″ thick, requiring total of 1112 cu. yds. of specification concrete having a 28-day compressive strength of 4,500 psi. This was properly processed and delivered in 6 pours by truck mixers of certified design, capacity, mixing speed and water control accuracy.

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

BLAW-KNOX CONSTRUCTION EQUIPMENT DIV.
Mattoon, Ill.
CHAIN BELT COMPANY
Milwaukee, Wis.
CHALLENGE MANUFACTURING CO.
Los Angeles, Calif.
CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.
CONSTRUCTION MACHINERY CO.
Waterloo, Iowa
THE JAEGER MACHINE COMPANY
Columbus, Ohio
THE T. L. SMITH COMPANY
Milwaukee, Wis.
WESTINGHOUSE TRANSIT MIXER DIV.
Indianapolis, Ind.
WHITEMAN MANUFACTURING CO.
Pacoima, Calif.
WILLARD CONCRETE MACHINERY CO., LTD.
Lynwood, Calif.
WORTHINGTON CORPORATION
Plainfield, N. J.

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—SLC

▲ Vt., Middlebury—LIBRARY—President & Fellows of Middlebury College, Middlebury, soon lets contract Egbert Starr Library Addn. $1,350,000. Plans deposit $50. Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, Mass., assoc. archts. Freeman, French & Freeman, 158 Bank St., Burlington, archts. CD 11/8/56.

BUILDINGS—LB & CA

▲ Morris & Son Constr. Co., 219 Central St., Lowell, Mass., CA $1,000,000, est. $1,100,000, ADMINISTRATION BLDG., WALTHAM, MASS. Brandeis University, 415 South St., Waltham, Mass. Bids July 16. CD 7/28.

▲ Green Manor Estates Inc., 681 Parker St., Manchester, Conn., Owner Builds, $3,930,000 393 HOUSES, "Green Monorville" Taylor Rd., Scitico, ENFIELD, CONN. Philip J. DiCorcia, 376 West Middle Turnpike, Manchester, Conn., archt. CD 1/15/57.

▲ Den Deering Co., 209 Main St., Norwalk, Conn., LB $2,012,000. HIGH SCHOOL, DARIEN, CONN. Town, Town Hall, Supt. Schools, Rebsgaw Rd., Darien, Conn. Bids July 23. CD 7/1.

▲ Frouge Constr. Co., Inc., 141 North Ave., Bridgeport, Conn., CA $6,000,000 SHOPPING PARK, 60 acre tract, Main St., TRUMBULL, CONN. Tromas Frouge, 141 North Ave., Bridgeport, Conn. Awarded July 24. CD 3/14/56.

George V. Fosberg, 2 Garden St., Wilson, Conn., Owner Builds. $900,000. 30 HOUSES, WINDSOR, CONN. CD 3/14/56.

▲ Pilgrim Homes, Inc., Kennedy Rd., Windsor, Conn., Owner Builds, $1,500,000. 115 HOUSES, Kennedy Rd., WINDSOR, CONN.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ Del., Wilmington—SCHOOL—BA 8/20—Bd. P. Educ., John J. Murray, secy., 511 West 8th St., Wilmington. Senior High School, Lancaster Ave., at Dupont Rd., Over $3,000,000. Whiteside, Moeckel & Carbonell, 909 Tatnall St., archts. CD 7/16, under LB.

▲ Pa., Clarion—DORMITORY, etc.—BA 8/20—General State Auth., 18th and Herr Sts., Harrisburg, women's dormitory and utility expan. for Clarion State Teachers' College. $1,000,000. Plans deposit $15. A. M. Marks, 610 Hardy and Hayes Bldg., Pittsburgh, archts. A. F. Jones, c/o owner, ch. engr. CD 1/2/57.

▲ Pa., Petersburg — SCHOOL — BA 8/21 — Pa. Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, Junior-Senior High School for Juniata Valley Jt. School Dist. (Proj. 714-620). $1,200,000. Plans deposit $50. Hunter, Campbell & Rea, 3601 5th Ave., Altoona, archts. CD 3/24.

▲ N. Y., New York—SCHOOL—BA 8/26—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 134, Scammel and Henry Sts., Manhattan Boro. $2,442,150. Plans deposit $25 for general, $8 each for trades. CD 5/30.

HEAVY CONSTRUCTION—LB & CA

† Consolidated Constr. Inc., 21 E. 40th St., New York, N. Y., CA $928,167, readiness crew bldg. at Plattsburgh Air Force Base, Serial No. ENG-30-075-58-296, PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16th St., New York 3, N. Y. Bids June 23. CD 5/26.

▲ NEW JERSEY—State Hy. Dpt., Kenneth D. Rice, secy., 1035 Parkway Ave., Trenton, Bids opened 7/24.

N. J.—Thomas Nicol Co., Inc., Hamilton Rd., Farmingdale, N. J., LB $1,538,937, (9 bidders), grading paving and drainage 3.78 mi. Rte. 42, Sections 14F and 15C North-South Freeway, from Black Horse Pike to Turnerville, Camden and Gloucester Counties;

N. J.—Gaskill Constr. Co., Inc., Hartford Rd., Riverside, N. J., LB $620,078, (5 bidders), widn. and dualization of 1.697 mi. Rte. 73 from U. S. Rte. 130 to Tacony-Palmyra Bridge plaza, Borough of Palmyra, Burlington Co.;

N. J.—Louis Zimmerman & Sons, Inc., 278 Hillside Ave., Hillside, N. J., LB $773,332, (7 bidders), widn. 2.818 mi. Rte. 3, Section 3D from Grove St. to Passaic Ave., City of Clifton, Passaic Co. CD 7/1.

▲ PENNSYLVANIA—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 7/24,

Pa.—J. H. Beers, Inc., R.D. 2, Bangor, Pa. LB $490,656 (6 bidders) 19,679 ft. crushed aggreg. base with bit. surf. 22 ft. wide; 2 bridges, L.R. 40118 (1), Lehigh and Foster Twps., Carbon and Luzerne Counties;

Pa.—Silvestri Bros., 713 Andrews Ave., Youngstown, O. and Foster Grading Co., R.D. 2, Jackson Center, Pa. LB $1,849,938 (4 bidders) 33,749 ft. plain cement concrete base with bit. surf. 50 ft. wide incl. 2 ft. tfc separator, widening existing pavement; 1 bridge, T.R. U.S. 322 Conneaut Lake Boro, Sadsbury and Vernon Twps., Crawford Co.;

Pa.—H. J. Williams Co., Inc., 150 S. Sumner St., York, Pa. LB $2,289,375, est. $2,500,000 (6 bidders) constr. 13,808 ft. divided hy. c. conc. 24 ft. wide, each side of divisor, 2 bridges, L.R. 1001 FAI, a section of Penn-Conn Hy. New Milford Boro, New Milford and Great Bend Twps., Susquehanna Co. CD 7/9.

▲ PENNSYLVANIA—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 7/24;

Pa.—Dravo Corp., Dravo Bldg., Pittsburgh 25, Pa. LB $1,957,022 (3 bidders) 2 main piers for Fort Duquesne Bridge; 7 belts for approaches stairway landing and rein.-con. retaining walls 1,115 ft. L.R. 246 (14) Pittsburgh, Allegheny Co.;

Pa.—U. S. Steel Corp., 1236 Suburban Station Bldg., 1617 Penn Blvd., Phila. 3, Pa. LB $2,891,341 (3 bidders) superstructure for main river span and 2 flanking spans, Fort Duquesne Bridge, 659 ft. L.R. 246 15, Pittsburgh, Allegheny Co. CD 7/9.

▲ PENNSYLVANIA—Pa. Hys. & Bridge Auth., 506 North Office Bldg., Harrisburg, Bids opened 7/24,

Pa.—The Interstate Amiesite Corp., Rte. 202, Concordville, Pa. LB $854,305, est. $650,000 (4 bidders) 50,473 ft. crushed aggreg. base with bit. surf. variable in width; widn. existing road, 3 bridges (Proj. 714-1) Gaines, Shippen and Delmar Twps. Tioga Co.;

Pa.—Latrobe Road Constr. Co., Box 150, Latrobe, Pa. LB $5,242,201, est. $4,500,000 (7 bidders) 26,216 ft. divided hy. c. conc. 24 ft. wide each side of divisor; 9 bridges, U.S. 30 Greensburg By-pass, Proj. 706-1, Hempfield Twp., Greensburg City, South Greensburg and SW Greensburg Boros, Westmoreland Co. CD 7/8.

▲ PENNSLYVANIA—Pa. Hy. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 7/25,

Pa.—J. Robert Bazley, Inc., Box 298, Pottsville, Pa. LB $2,765,017 (9 bidders) 78,115 ft. conversion U. S. Rte. 22 to limited access, Bethel, U. Tulpehocker and U. Bern Twps., Strausstown Boro, Berks Co.;

Pa.—Stabler Constr. Co., 635 Lucknow Lane, Harrisburg, Pa. LB $1,019,762 (4 bidders) 62,503 ft. crushed aggreg. base with bit. surf. 22 ft. wide, T. R. 115 between Ricketts Glen and Rte. 309 Fairmount, Ross and Lake Twps., Luzerne Co.;

Pa.—Latrobe Rd. Constr., Inc., Box 150, Latrobe, Pa. LB $3,481,873 (3 bidders) 32,915 ft. divided hy. rein.-con. 24 ft. wide each side divisor, 7 bridges, Windbur By-Pass. TR. 56 Winder, Paint and Scalp Level Boros, Richland and Paint Twps. Somerset and Cambria Counties;

Pa.—Seigmund Gavlik, Box 44, Glenwillard, Pa. LB $935,659 (7 bidders) 28,135 ft. widening existing road with c. conc. variable in width. T. R. 19, Peters and U. St. Clair Twps., Washington and Allegheny Counties. CD 7/10.

▲ PENNSYLVANIA—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg, Bids opened 7/25,

Pa.—Kaufman Constr. Co., Inc., 4000 Pulaski Ave., Phila., 40, Pa., LB $1,675,383, est. $1,100,000 (6 bidders) 2,120 ft. depressed hy. c. conc. base course with bit. surf. 22 ft. wide each side divisor 26th St. underpass at Paassayunk Ave. (Proj. 823-1) FAI, Phila., Phila. Co.;

Pa.—John F. Casey Co., Box 1888, Pittsburgh 30, Pa. LB $4,778,715, est. $6,000,000 (5 bidders) 22,598 ft. divided hy. rein.-con. cement variable in width each side divisor 2 parallel bridges, 7 graded separations, a section of Erie Thruway (Proj. 809-1) FAI, North East Twp. Erie Co.;

Pa.—State Paving & Constr. Co., 69th and Kingsessing Ave., Phila. 42, Pa. LB $1,287,744, est. $1,000,000 (5 bidders) 24,594 ft. c. conc. road variable in width between Newtown Square and Highland Park, T. R. 3 Newtown, Marple, Haverford and Upper Darby Twps., Delaware Co. CD 7/10.

▲ PENNSYLVANIA—Pa. Hy. & Bridge Auth. 506 North Office Bldg. Harrisburg,

Lycoming Constr. Co., 127 Susquehanna St., Williamsport, Pa. CA $2,433,341, 24,454 ft. divided hy. of c. conc. 24 ft. wide each side divisor FAI. Proj. 821-1, section Scranton-Binghamton Thruway. New Milford and Great Bend Twps. Susquehanna Co. Bids June 27, awarded July 23. CD 7/22, under LB.

▲† Beacon Constr. Co. of Mass., Inc., 102 Hano St., Boston 34, Mass. CA $1,392,699. constr. 64 family dwellings units and related site imprvs. and utilities at sites PI-03, PI-36, PI-37 and PI-43, Pittsburgh Defense Area, Allegheny, Washington and Westmoreland Counties, ENG-36-058-58-35, PENNSYLVANIA. U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa. CD 3/7/55.

BUILDINGS—LB & CA

▲ Caristo Constr. Co., 436 W. 49, New York 2, N. Y., CA Est. $5,000,000, 4 story STORE and GARAGE, Elm Pl., Livingston and Hoyt Sts., BROOKLYN, N. Y. Abraham & Straus, Fulton and Hoyt Sts., Brooklyn 1, N. Y. (Correction—location). CD 7/28, under CA, New York, N. Y.

▲ Castagna & Son, Inc., 2110 Northern Blvd., Manhasset, N. Y., LB $1,937,936 (13 bidders), general contract JUNIOR-SENIOR HIGH SCHOOL, JERICHO, N. Y. Bd. Educ., Jericho, N. Y. Bids July 23. CD 4/10.

▲ Independence Terrace Corp., 1464 Jesup Ave. New York 52, N. Y., Owner Builds, $1,000,000, 6 story APARTMENT, at Hudson Bridge approach northwest corner of Palisades Ave., NEW YORK, N. Y. CD 2/20.

▲ Henry Kibel, c/o George G. Miller, archt., 125 W. 45 St., New York 19, N. Y., Owner Builds, $1,500,000, 20 story APARTMENT for 200 families, East 51 St. and Second Ave., NEW YORK, N. Y. CD 3/31.

▲ Turner Constr. Co., 150 E. 42 St., New York 17, N. Y., CA Est. $1,750,000, altering OFFICE BLDG., 607-9 Fifth Ave., NEW YORK, N. Y. Henry Phipps Estate, 800 Second Ave., New York 17, N. Y. CD 4/8.

▲† Sovereign Constr. Co., 1325 17th St., Fort Lee, N. J., CA $1,311,408, conversion of West Academic Bldg. to CADET BARRACKS at U. S. Military Academy, Serial No. ENG-30-075-58-307, WEST POINT, N. Y. U. S. Eng., 111 E. 16th St., New York 3, N. Y. Bids June 24. CD 7/1, under LB.

▲ Isaac Degenaars, 231 Greenwood Ave., Midland Park, N. J., CA $1,356,292, general contract 2 DORMITORIES, NEW BRUNSWICK, N. J., Douglas College, Rutgers University, College Ave., New Brunswick, N. J., CD 6/6, under LB.

▲ Joseph L. Reidy, 82 Richelieu Place, Newark, N. J., Own Forces, $3,500,000, 197 HOUSES, Beverwyck and Vail Rds., PARSIPPANY, N. J.

▲ Michael Riess & Co., Inc., Church St., Fords, N. J., CA $1,456,980, general contract 1 story JUNIOR HIGH SCHOOL, Iselin, WOODBRIDGE, N. J., Bd. Educ., Woodbridge, N. J., Target for completion Sept. 1, 1959. CD 6/27.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲† Southeastern Constr. Co., Box 7264, Station C, Atlanta, Ga., CA $1,134,750, support facilities, NBy-16665, U. S. Naval Station, ATLANTA, GA. Dist. P. Wks. Office, Bldg. 13, Charleston, S. C. Bids June 26, awarded July 11. CD 7/7, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
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CD Construction Daily

For additional reports see Construction Daily.

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▲ **Sullivan, Long & Hagerty,** 2028-2nd Ave. N., Bessemer, Ala., CA **$1,959,742,** est. $1,750,000. Shades Valley Sewage treatment plant to serve Shades Valley area of County, BIRMINGHAM, ALA. Jefferson Co. Comn., Courthouse, Birmingham, Ala. Bids July 1, awarded July 22. CD 7/9, under LB.

▲ **LOUISIANA**—Dpt. Hys., Rm. 307, Hy. Office Bldg., Baton Rouge. Bids opened 7/23,

La.—**W. R. Fairchild,** Hattiesburg, Miss. and **Taylor-Wheless Co., Inc.,** Jackson, Miss. (combined bid) LB **$5,500,934,** grading, grade separation structures, c. conc. 9.526 mi. Minden By-Pass Hy. Rte. 1-20, SP Nos. 740-00-11 and 740-00-12. FAP Nos. I-20-1 (8) 44 I-540(8) and I-20-2(4) 54 I-54(4), Webster and Bienville Parishes;

La.—**W. R. Fairchild** and **J. W. Snowden,** Hattiesburg, Miss., LB **$2,877,806,** grading, small drainage structures, bridge and overpass structures 6.141 mi. Jennings-Egan Hy., Rte. I-10, SP Nos. 450-03-03 and 450-04-07, FAP Nos. I-10-1(16) 65 and I-10-2(2) 66, Jefferson Davis and Acadia Parishes. CD 7/10.

BUILDINGS—LB & CA

▲ **Combustion Engineering Inc.,** 5319 Shreve Ave. St. Louis 15, Mo. CA Est. **$5,000,000.** 200,000 kw boiler unit to be installed in the Possum Point POWER PLANT at QUANTICO, VA. Virginia Electric & Power Co., 7th and Franklin Sts., Richmond, Va.

▲ **Allen M. Campbell Co.,** Box 836, Tyler, Tex., LB **$4,389,500** Base Bid Sunland Training CENTER, Lee County, East of FORT MYERS, FLA. Bd. Comrs. State Institutions, Tallahassee, Fla. Bids 7/17. CD 6/17.

MIDDLE WEST

BUILDINGS—BA

▲ **Ill., Chicago**—LAW SCHOOL—BA 8/14—Northwestern University, W. S Kerr, bus. mgr., Evanston, 3 story, bsmnt., limestone face, rein.-con., air-conditioned Robert McCormick Law School addn. $1,500,000. Holabird, Root & Burgee, 180 N. Wabash St., Zone 1, archts. CD 10/23.

▲ **Wis., Madison**—MARRIED STUDENTS APARTMENTS—BA 8/14—University of Wisconsin, Madison, 400 unit married student apartments, Proj. 3, $3,600,000. Plans deposit $25, Gausewitz & Cashin, 321 S. Hamilton St., archts.

BUILDINGS—SLC

▲ **Indiana** — SERVICE STATIONS — Standard Oil of Indiana, 910 S. Michigan St., Chicago 5, Ill., soon lets contract six 1 story, limestone, concrete block, bar joist metal door, cer tile floor service stations, with 2 rests and 2 service stations each for Indiana Toll Road Comn., 309 W. Washington St., Indianapolis. $2,800,000. Chas. Cole & Son, 220 LaSalle St., South Bend, archts. CD 5/22.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—Ohio Dpt. Hys., Columbus, Zone 15, Bids opened 7/22,

O.—**Shelly & Sands, Inc.,** Thornville, O., LB **$890,723,** est. $969,700, widen State Rte. 3 to 24 ft. between Schenck Creek and point south of Ashland County line, widening of the bridge which spans Schenck Creek from 24 to 27.5 ft. is included in this 12.4 mi. Proj. Knox Co.; LB **$89,222,** est. $98,780, repaving, State Rte. 146, State Rte. 574, State Rte. 146, State Rte. 574, State Rte. 670, Guernsey, Monroe and Noble Counties; LB **$130,516,** est. $158,110, repaving, State Rte. 278, State Rte. 327, State Rte. 143, State Rte. 670, State Rte. 327, State Rte. 328, Hocking, Meigs, Ross and Vinton Counties; LB **$123,-068,** est. $146,145, repaving, State Rte. 555, State Rte. 669, State Rte. 78, State Rte. 260, State Rte. 513, State Rte. 564, Morgan, Noble, Counties.

O.—**DeSalvo Constr. Co. & S. A. Ruble Co.,** 3701 Red Bank St., Cincinnati, O., LB **$4,816,400,** est. $5,072,-700, constr. 4.95 mi. of the Cincinnati-Dayton Freeway from the Kyles Station Rd. in Butler Co. to just north of Bigler Rd. in Warren Co., included in the project are 10 bridges, and interchange with State Route 63 and two roadside rests, Butler and Warren Counties.

O.—**Schoen Asphalt Paving,** 310 S. Westwood St., Toledo, O., LB **$1,174,206,** est. $1,376,500, constr. relocated U. S. 23 nine-tenths mile from the Michigan State line to point just north of Ten Mile Creek in village of Sylvania. This 1.5 mi. project includes work on adjoining roads and constr. of a modified cloverleaf interchange at the intersection with Monroe St., Lucas Co.;

O.—**Blazer & Wright, Inc.,** Cheshire, O., LB **$448,780,** est. $478,900, relocate 1.4 mi. section of U. S. Rte. 52 near Friendship; 44 roadway with bridge over Turkey Creek, Scioto Co.;

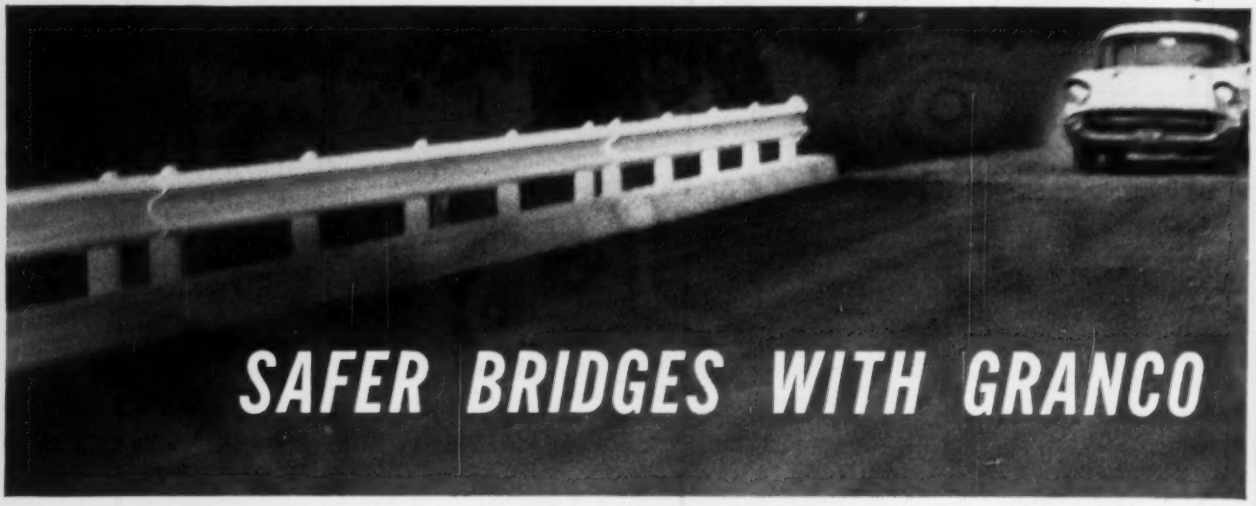
O.—**V. N. Holderman & Sons,** 890 Oakland Park, Columbus, O., LB **$3,716,735,** est. $3,801,100, constr. 4.4 mi. section of a 4 lane divided highway west of existing U. S. 33 from a mile north of Athens corporation line to a point ½ mi. northwest of the junction of existing U. S. 33 and State Rte. 682, Athens Co.;

O.—**Arthur S. Langenderfer, Inc.,** 3366 Brookside St., Toledo, O., LB **$745,895,** est. $774,600, widen and resurf. 12.3 mi. of U. S. Rte. 24 from Napoleon to east of the Henry-Lucas County line, Henry and Lucas Counties.

BUILDINGS—LB & CA

▲ **Imperial Homes,** c/o Robert D. Stakich, 830 E. 185 St. Cleveland, O., Owner Builds, **$2,000,000.** 180 HOMES, Reynolds Rd. north of Lake Shore Blvd., MENTOR-ON-THE-LAKE, O.

▲ **J. D. Jennings Corp.,** 311 E. Barbee St., Louisville, Ky. LB **$1,998,287** (11 bidders) HIGH SCHOOL and



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GYMNASIUM, MADISON, IND. Madison School Corp., Madison, Ind. Madison Consolidated Schools, Madison, Ind., lessee. Bids July 22. CD 6/25.

Kelso Constr. Co., 1710 W. Lawrence St., Chicago, Ill., CA **$983,067**, general contract Charles A. Prosser Vocational HIGH SCHOOL, CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, Ill. Bids July 21. CD 7/10.

▲ **Hutter Constr. Co.**, 135 Western Ave., Fond du Lac, Wis., CA **$2,785,000**, general contract 6 story HOSPITAL, GREEN BAY, WIS. St. Mary's Hospital, 411 S. Webster Ave., Green Bay, Wis. CD 12/19.

▲ **Bryant & Detwiler Co.**, 2110 Penobscot Bldg., Detroit 26, Mich., CA **$6,975,861**, general contract GENERAL HOSPITAL, incl. laundry, health center, ELOISE, MICH. Bd. Supervs. Wayne Co., City-County Bldg., Detroit, Mich. Bids June 3. Grand total $12,179,196. CD 4/9;
Lorne Plumbing & Heating Co., 641 Congress St., Detroit 26, Mich., CA **$3,313,601**, mechanical work (Eloise, Mich.);
Hydon-Brand Co., 5330 East Davison, Detroit 12, Mich., CA **$1,517,588**, electrical work (Eloise, Mich.);
Elevator Constr. & Service Co., 2000 West Lafayette Blvd., Detroit 16, Mich., CA **$372,146**, elevator work (Eloise, Mich.).

▲ **Erickson & Lindstrom**, Sill Bldg., Flint, Mich., CA **$1,774,444**, general contract HIGH SCHOOL, West 12th St., FLINT, MICH. City, Bd. Educ., Flint, Mich. Grand total $2,750,894. Bids June 23. CD 7/17, under LB.
Flint Plg. & Htg. Co., 711 W. 12th, Flint, Mich., CA **$579,000** mechanical work (Flint, Mich.);
Motor City Elec. Co., 671 Milwaukee, Detroit, Mich., CA **$397,450**, electrical work (Flint, Mich.).

Perron Constr. Co., 6525 Lincoln, Detroit, Mich., LB **$936,800**, SCIENCE and TECHNICAL BLDG. for Flint Junior College, FLINT, MICH. City, Bd. Educ., 205 E. Eighth St., Flint, Mich. MacKenzie Knuth & Klein Assoc., 708 Harrison St., Flint, Mich., archts. Bids July 14. CD 8/4/55.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Tex., Laredo**—MOTEL—Bids Asked—T. A. Bunn & Assocs., motel. $1,000,000. DeVerne Kittles, 523 W. Hildebrand St., San Antonio, archt. CD 6/13.

▲ **Tex., Sonora**—PLANT—Bids Asked—Pioneer Gathering System, Inc., 301 Taylor St., Amarillo, gas cleaning plant 20 mi. NW of here. $1,000,000. CD 7/23.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,
Berghuis Constr. Co., Prinsburg, Minn., CA **$1,033,544**, grav. base and road-mixed bit. base 13.2 mi. near Brainerd and Nisswa, Crow Wing Co. Bids June 27. CD 7/2, under LB.

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,
Woodrich Constr. Co., 201-18 Ave. S., Hopkins, Minn., CA **$1,654,592**, grav. base, plant mixed bit. surf. b. conc. surf. and concrete paving 5 mi. Hennepin Co. Bids July 11. CD 7/17, under LB.

▲ **IOWA**—State Hy. Comn., Ames, Bids opened July 22,
Iowa—**Booth & Olson, Inc.**, 529 Insurance Exchange Bldg., Sioux City, Iowa, LB **$516,279**, c. conc. I-29-4 (2) 64, (I-920 (4)), Harrison and Pottawattamie Counties; LB **$177,264**, c. conc. and wid'n. 8.695 mi. Widen F-342 (21) Plymouth and Sioux Counties;
Iowa—**Green Constr. Co.**, 321 Locust St., Des Moines, Iowa, LB **$681,222**, c. conc. 9.671 mi. Regular DF-1074 (2), Lucas Co., LB **$271,783**, c. conc. 4.064 mi. Regular DF-1074 (1), Warren Co.;
Iowa—**Iowa Road Bldg. Co.**, 109 N. North Ave., Fairmont, Minn., LB **$173,750**, b. conc. 3.203 mi. Special DF-560 (3), Fremont Co.; LB **$447,472** b. conc. 9.947 mi. DF-402 (8), Guthrie Co.; LB **$83,480**. b. conc. 3.518 mi. DS-581 (2), Hamilton Co.;
Iowa—**R. S. Krage Co.**, Box 1469, Sioux City, Iowa. LB **$347,008**. grading 12.466 mi. DF-486 (1), Taylor Co. CD 7/9.

▲† **Schuelier & Co., Inc.**, 2705 Rhomberg Ave., Dubuque, Iowa. CA **$1,130,300**. constr. utilities Offutt Air Force Base, Contr. No. DS-25-066 ENG-5055 (IFB ENG 25-066-58-125), FORT CROOK, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 9/19.

FAR WEST

BUILDINGS—BA

▲ **Calif., Santa Ana**—SCHOOL—BA 8/19—School Dist., 1415 French St., 150,000 sq. ft. frame, stucco Del Rio Senior High School. $1,800,000. Extended date. Harold Gimeno, 1400 N. Sycamore St., Santa Ana, archt. CD 7/25.

▲ **Calif., Oakland** — SCHOOL — BA 8/26 — City Unif. School Dist., 1025-2nd Ave., frame, stucco Sobrante Park Junior High School. $1,500,000. Plans deposit $50. Mitchell Van Bourg, Claremont Hotel, Berkeley, archt. Haluk Akol, 2171 Shattuck Ave., Berkeley, engr. CD 2/26.

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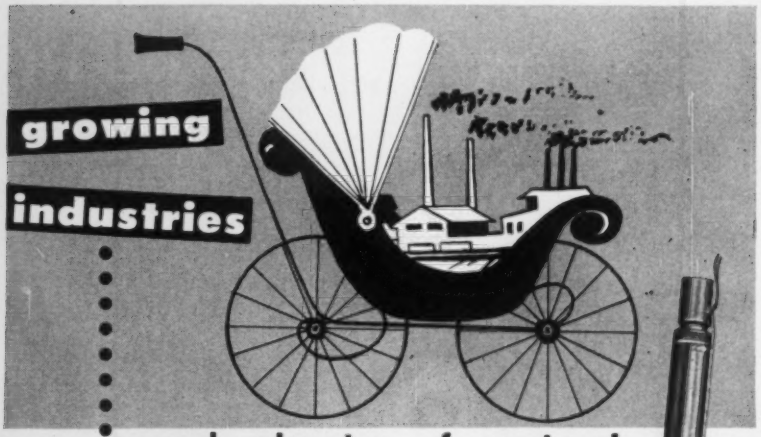

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HEAVY CONSTRUCTION—LB & CA

▲ **WASHINGTON**—State Hy. Comn., Olympia, **Woodworth & Co., Inc.**, 1200 E. D St., Tacoma, Wash., CA $1,279,507 (3 bidders) surf., constr. cement-treated base and bit. surf. treatment, paving with c. conc. and b. conc., constr. 3 rein.-con. bridges and fencing on 3.728 mi. Pierce Co., Bids July 22, awarded July 23. CD 7/24, under LB.

▲ **CALIFORNIA** — State Div. Hys., 1120 N. St., Sacramento, **John Delphia & Fred J. Early Jr. Co., Inc.**, P.O. Box 607, Patterson, Calif. CA $1,438,427, grading, surf. to constr. 5.8 mi. 4-lane divided expressway U. S. 101 between 0.7 mi. north of Soledad and 1 mi. south of Gonzales, Monterey Co. Bids July 9, awarded July 22. CD 7/11, under LB.

BUILDINGS—LB & CA

▲ **Staggs-Built Homes, Inc.**, 3620 E. Indian School, Phoenix, Ariz. Owner Builds. $12,000,000. 1,000 HOMES, McDowell and Scottsdale Rds., PHOENIX, ARIZ.

▲ **Kitchell-Phillips Contractors, Inc.**, 1706 W. Buchanan, Phoenix, Ariz., CA $9,000,000, SHOPPING CENTER, East Thomas Rd., PHOENIX, ARIZ. East Thomas Investment Corp., c/o Ralph Haver & Assocs., archts., 207 E. Camelback, Phoenix, Ariz. Awarded July 16.

▲ **Howard J. White, Inc.**, 870 Charleston Rd., Palo Alto, Calif., CA $2,162,726, Del Mar HIGH SCHOOL, near County Hospital, CAMPBELL, CALIF. Campbell Union High School Dist., c/o Supt., 151 N. Winchester Rd., Campbell, Calif. Bids July 17, awarded July 18. CD 7/23, under LB.

▲ **William D. Greschner Co.**, 1108 E. Washington Ave., Santa Ana, Calif. CA $2,647,000, precast concrete Westminister HIGH SCHOOL, HUNTINGTON BEACH, CALIF. Huntington Beach Union High School Dist., 1905 Main St., Huntington Beach, Calif. Bids June 4. CD 6/9, under LB.

▲ **Ames Constr. Co.**, 5511 El Cajon Blvd., San Diego, Calif. Owner Builds. $1,096,000. 87 DWELLINGS, Geraldine Ave., Chauncey Dr., Rossmar Dr. and Polland Ave., SAN DIEGO, CALIF.

▲ **I. C. Curry, Inc.**, 1701 B St., San Diego, Calif. CA $1,443,258, constr. Albert Einstein JUNIOR HIGH SCHOOL in Claremont, SAN DIEGO, CALIF. San Diego Unif. School Dist., 825 Union Ave., San Diego, Calif. Bids July 10. CD 7/15, under LB.

▲ **James I. Barnes Constr. Co.**, P.O. Box 1073, Pomona, Calif. LB $3,325,000 (6 bidders) constr. San Marcos HIGH SCHOOL, SANTA BARBARA, CALIF. Bd. Educ., City School Dist., Santa Barbara, Calif. Bids July 23. CD 6/30.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **ALBERTA**—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., **Standard Gravel & Surfacing of Canada Ltd.**, 5340 1 St. S.W., Calgary, Alta., LB $1,332,605 (3 bidders) grading, culverts, base course Mile 46 to Mile 58, North Saskatchewan River bridge Mile 47.9 Jasper-Banff Hy., Banff National Park, Banff. Bids July 17. CD 6/27.

▲ **Diamond Constr.**, Lakeburn, N. B. and **Annapolis Valley Constr. Co.**, Bedford, N. S., CA $1,500,000. five power stations in western section of NOVA SCOTIA. Nova Scotia Power Comn., Halifax, N. S. Bids June 30. CD 6/18.

▲ **C. A. Pitts General Contractor Ltd.**, 30 Commercial Rd., Toronto, Ont., LB $1,378,830 (4 bidders) excavation Cornwall Island north channel and completing regulating channel, St. Lawrence Seaway, Cornwall, ONTARIO. St. Lawrence Seaway Auth. No. 2 Temporary Bldg., Wellington St., Ottawa, Ont. A. Gordon Murphy, c/o owner, 685 Cathcart St., Montreal, Que., ch. engr.

▲ **S. McNally & Sons Ltd.**, P. O. Box 157, Postal Station "C", Hamilton, Ont., LB $6,652,217 (9 bidders) aeration and settling tanks at Ashbridge's Bay Sewage Treatment Plant, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids July 7. CD 6/19; **Bryan-Donkin Co. Ltd.**, 217 Bay St., Toronto, Ont. LB $222,928 supplying, installing centrifugal blower equip. (Toronto, Ont.).

▲ **QUEBEC**—Provincial Dpt. P. Wks., Parliament Bldgs., Quebec City, **Cremazie Construction Ltee**, 190 Cremanzie Blvd. E., Montreal, Que., CA Est. $7,000,000. 2,000 ft. steel, concrete bridge with 48 ft. roadway and two 5 ft. sidewalks over Richelieu River between St. Johns and Iberville, Iberville. CD 6/17.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ark., North Little Rock**—City, City Hall, water supply Ark. 3-P-3010. $1,500,000. Marion L. Crist & Assocs., Union Life Bldg., Little Rock consult. engrs. CD 3/8/54.

▲ **Iowa, Ottumwa**—City, Ottumwa Water Works & Hydro Electric Plant, Ottumwa, Phase 2, water treatment plant, incl. pumping, filtration and chemical storage facilities, $1,500,000, Bids March or April 1959; installing 8 tainter gates and one bascule gate, concrete footing, piers and foundations, $700,000, Bids September or October 1958. Burns & McDonnell Eng. Co., 95 and Troost Sts., P. O. Box 7088, Kansas City, Mo., consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Ark., North Little Rock**—City, City Hall, sanitary and storm sewers, Ark. 3-P-3011. $2,307,500. Max

Mehlburger, 627 Pyramid Bldg., Little Rock, consult. engrs. CD 3/10/49.

▲ **La., Monroe**—City, City Hall, storm drain facilities, La.-16-P-3031, $1,900,000, S. E. Huey & Co., Heninger Bldg., consult. engrs.; sanitary sewer facilities, La.-16-P-3-32, $1,100,000, W. R. Neil & L. G. High, Kusin Bldg., consult. engrs.

▲ **La., Norco**—Sewer Dist. 1 of St. Charles Parish, Norco, sewer facilities, La.-16-P-3026, $1,301,900, Fromherz Engineers, 816 Howard Ave., New Orleans, consult. engrs. CD 6/12.

▲ **O., North Olmstead**—Village, Village Hall, Dover Center Rd., bond election Nov. 4, sewage plant and constr. sewers, $6,433,000, Floyd G. Browne & Assoc., 125 W. Church St., Marion, consult. engrs. CD 12/7/56.

▲ **Tex., Fort Worth**—City, City Hall, bond election Sept. 9, incinerators, $1,550,000. CD 9/17/51.

STREETS AND ROADS

▲ **La., Monroe**—City, City Hall, street paving and imprvs., La.-16-P-3030, $2,200,000. S. E. Huey & Co., Heninger Bldg., consult. engrs.

O., Lorain—City, City Hall, bond election Nov. 4, sewer imprvs. $700,000. CD 11/12/51.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg.

Clarion and Jefferson Counties—8.4 mi. section of Keystone Shortway. $7,000,000.

Mercer, Venango, Clarion and Jefferson Counties—90 mi. Keystone Shortway between Ohio State Line and Sandy Valley. $100,000,000. Buchart Eng. Corp., 611 W. Market St., York, consult. engrs. R. A. Farley, c/o owner, ch. engr. CD 6/3/57.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg.

Union, Northumberland, Montour, Columbia, Luzerne, Carbon and Monroe Counties—88 mi. Keystone Shortway between Whitedeer and Tannersville. $90,000,000.

Union, Northumberland and Montour Counties—15 mi. section of Keystone Shortway between Whitedeer and T.R. 54. $14,500,000. Michale Baker, Inc., Rochester, Pa., consult. engr. R. A. Farley, c/o owner, ch. engr. CD 6/3/57.

▲ **Tex., Fort Worth**—City, City Hall, bond election Sept. 9, streets, storm sewers, traffic signals, street lighting, $22,875,000. CD 9/17/51.

AIRPORTS

▲ **N. Y., Buffalo**—AIRPORT IMPRVS.—Niagara Frontier Port Auth., City Hall, Buffalo, Buffalo Airport imprv. program, incl. NE-SW runway exten. to 8,000 ft., terminal expansion; 5,000 ft. runway and eventual 9,200 ft. NE-SW Runway. $8,140,000. Thomas Bourne Assoc., Inc., and Leigh Fisher & Assoc., Dupont Circle Bldg., Wash., D. C., consult. engrs. CD 2/15/56.

LATIN AMERICA

▲ **Mexico, Manzanillo**—FOUNDRY—Mexican Fed. Govt., Dpt. P. Wks. & Communications, Admin. Bldg., Mexico City, plans iron and steel foundry, $24,000,000.

▲ **Mexico, Manzanillo**—Mexican Fed. Govt., Dpt. P. Wks. & Communications, Admin. Bldg., Mexico City, plans roads near here, $6,000,000.

▲ **Mexico, Manzanillo**—Mexican Fed. Govt., Dpt. P. Wks. and Communications, Admin. Bldg., Mexico City, plans seaport expansion, $10,000,000.

▲ **Mexico, Manzanillo**—AIRPORT—Mexican Fed. Govt., Dpt. P. Wks. & Communications, Admin. Bldg., Mexico City, plans airport, $1,000,000. Constr. 1959. CD 1/4/52.

▲ **Mexico**—RAILWAY LINE—Mexican Federal Govt., Dpt. P. Wks. & Communications, Administration Bldg., Mexico City, Mexico, plans rehabilitation of railway line between Manzanillo and Guadalajara $2,000,000; railway lines near Manzanillo, $8,000,000.

U. S. POSSESSIONS

▲ **Canal Zone, Balboa**—Panama Canal Co., 425 13 St. N.W., Wash., D. C., U.S.A., high-level bridge across Panama Canal. $19,250,000 (appropriated). Sverdrup & Parcel, Inc., 915 Olive St., St. Louis, Mo., U.S.A., engrs.

FOREIGN

▲ **India, Calcutta**—PORT—Comrs. for Port of Calcutta, port imprvs. $29,000,000.

▲ **India, Madras** — PORT — Trustees of the Port of Madras, port imprvs. $14,000,000.

PUBLIC BUILDINGS

▲ **Ala., Bassemer**—HOUSING—Bessemer Housing Auth., City Hall, plans by Charles McCauley, Jackson Bldg., Birmingham, 600 one story units low rent housing. $7,500,000; 400 units low rent housing, $5,250,000.

▲ **Ala., Mobile**—HOSPITAL—Mobile Co. Bd. Revenue, Courthouse, plans by T. Cooper Van Antwerp, 354 St. Francis St., county hospital $6,000,000. Moulton Engineering Corp., Fort of Hurtel, Mobile, Ala., consult. engrs. CD 7/23.

▲ **Calif., Fort Ord**—HOUSING—U. S. Eng., Commanding Officer, Fort Ord, 1,000 unit Wherry Housing imprvs. $1,589,746 appropriated. CD 9/18.

▲ **Calif., Oakland**—CONVENTION CENTER—First Dist. Agricultural Assn., Claremont Hotel, Berkeley, convention center, 1st unit, 100,000 sq. ft. building for

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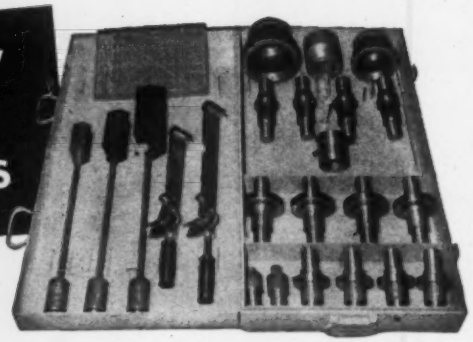

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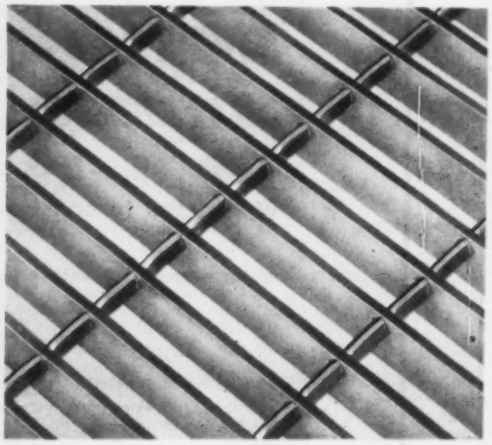

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office, restaurant, etc., 2nd unit approx. 100,000 sq. ft. also. $8,000,000.

▲ **Calif., Santa Monica**—HIGH SCHOOL—Santa Monica Unified School Dist., 1723 4th St., plans by John C. Lindsay, 1910 Main St., constr. Santa Monica High School, 601 Pico Blvd. $3,700,000. CD 6/11/57.

▲ **Colo., Lakewood**—HOSPITAL—Lincoln Hospital Inc., c/o C. Rose, 1375 Overhill Rd., 120-bed hospital, $1,000,000.

▲ **Ga., Decatur**—HOSPITAL—Comrs. DeKalb Co., Courthouse, plans by Bothwell & Nash, 216 Roswell Rd., Marietta, hospital. $4,000,000. Bids late in Fall 1958. CD 8/8/57.

▲† **Kan., Fort Riley**—HOUSING IMPRVS.—Commanding Officer, Fort Riley, 400-units Wherry Housing imprvs. $1,062,755. CD 9/17/57.

▲† **Ky., Fort Knox**—HOUSING—Commanding Officer, Fort Knox, 1,700 unit Wherry Housing. $2,707,245. CD 9/23.

▲ **Minn., St. Cloud**—SCHOOL—Bd. Educ., St. Cloud, plans by Traynor & Hermanson and V. E. Siddens, assoc. archt., 311 Granite Exch. Bldg., Junior High School. $1,250,000. Probably 1959 constr.

▲ **Mo., Kansas City**—SCHOOLS—Bd. Educ., 800 E. 21st St., Kansas City, Mo., Scarritt Elementary School addn. $520,000; Wendell Phillips School addn. $590,000; Garfield Elementary School $790,000. CD 5/4/56.

▲ **N. J., Columbus**—SCHOOL—North Burlington Co., Regional Bd. Educ., Columbus, plans by Howell, Louis & Shay Assocs., Pachard Bldg., Phila., Pa., Regional Junior-Senior High School. $1,000,000. CD 3/21.

▲† **N. J., Fort Dix**—HOUSING REPAIRS, etc.—Commanding Officer, Fort Dix, repairs and imprvs. 1,000 unit Wherry Housing units, $1,546,502. CD 8/31/55.

▲ **N. J., Montclair**—MUNICIPAL—Town, Town Hall, plans by Berrall & Burton, 6 S. Fullerton Ave., municipal bldg., Bloomfield Ave. and Valley Rd. $1,450,000.

▲ **N. J., Mt. Freedom**—HIGH SCHOOL—Bd. Educ., Randolph Twp., high school, Randolph Twp., $2,000,000.

▲ **N. J., New Brunswick**—BIOLOGICAL—Rutgers University, College Ave., plans by Perry, Shaw, Hepburn & Dean, 31 St. & James Ave., Boston, Mass., biological bldgs. $2,500,000. CD 1/22/57.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, plans by William I. Hohauser, 151 W 51 St., Zone 19, Mary K. Simkovitch Homes, eight 14-16 story buildings on site bounded by Mnotgomery St., Henry St. and FDR Dr., Proj. N.Y.-5-28. $12,000,000. Constr. January 1960. CD 11/17/55.

▲ **O., Ashtabula**—SCHOOL—Saybrook Local School Dist., Depot Rd., bond election Nov. 4, schools, $1,333,500.

▲ **O., Brecksville**—SCHOOL—Bd. Educ., 8915 Highland Dr., bond election Nov. 4, high school. $1,100,000. Robert A. Little, 1303 Prospect Ave., Cleveland, Zone 15, archt., CD 11/11.

▲ **O., Cincinnati**—SCHOOLS—Bd. Educ., 608 McMillan St. $10,000,000. bond election Nov. 4, schools. CD 11/5/54.

▲ **O., Cincinnati**—SCHOOL—Forest Hills School Dist., 7537 Beechmont St., bond election Nov. 4, high school $1,620,000. Garriott & Becker, 2414 Grandview St., archts. CD 11/29.

▲ **O., Cleveland**—EXHIBITION HALL—City, City Hall, bond election Nov. 4, exhibition hall, $15,000,000.

▲ **O., Cleveland**—COURT HOUSE—Comrs. Cuyahoga Co., Court House, bond election Nov. 4, remodeling old Lakeside Court House; $1,645,000; Juvenile Court Bldg. courtrooms, $490,000. CD 11/11.

▲ **O., Cleveland**—HOME—Comrs. Cuyahoga Co., Court House, bond election Nov. 4, County Nursing Home imprvs. $1,500,000. Milo S. Holdstein, 1030 Euclid Ave., archt. CD 2/5.

▲ **O., Columbus**—COUNTY HOME—Comrs. Franklin Co. Court House, 6 one story cottages, nursing rehabilitation unit, at County Home, $3,100,000. CD 9/19/56.

▲ **O., Columbus** — HOSPITAL — Franklin Co. Hospital Comn., Columbus, plans by Dan A. Carmichael, 5 E. Long St., 5 story addn. to Children's Hospital, $3,000,000. CD 9/24/53.

▲ **O., Coshocton**—SCHOOL—Three Rivers Bd. Educ., Coshocton, $1,300,000 bond election Nov. 4, high school and school addns. CD 5/20.

▲ **O., Elyria**—SCHOOL—Elyria Bd. Educ., bond election Nov. 4, school addns. $1,856,093. CD 11/13.

▲ **O., Jefferson**—COURT HOUSE—Comrs. Ashtabula Co., Court House, $2,900,000 bond election Nov. 4, county Courthouse. Fulton DelaMotte & Assocs., 6014 Euclid Ave., Cleveland, achts. CD 5/29/56.

▲ **O., Lakewood**—SCHOOL—Bd. Educ., 1470 Warren Rd., bond election Nov. 4, school rehabilitation, addns. $2,600,000.

O., Medina—SCHOOL—Black River Local Bd. Educ., Medina, bond election Nov. 4, high school. $820,000.

O., Painesville—SCHOOL—Bd. Educ., Painesville, bond election Nov. 4, elementary school, Walnut St., $870,000.

▲ **O., Shelby**—SCHOOL—Springfield Twp. Bd. Educ., Shelby, bond election Nov. 4, Ontario High School. $1,000,000.

▲ **O., Toledo**—SCHOOLS—Adams Twp. Bd. Educ., bond election Nov. 4, schools, $2,280,000. CD 5/13.

▲ **O., Toledo**—SCHOOLS—Bd. Educ., 1900 Linwood St., Toledo, election Nov. 4, 2.5 mill levy to run 3 years

high schools in West and South Toledo, $6,500,000; 1.8 mill levy, schools $1,575,000. CD 1/30.

▲ O., Van Wert—SCHOOL—Van Wert Bd. Educ., bond election Nov. 4, high school, $1,700,000. Joseph Baker & Assoc., Newark, archts. CD 5/12.

▲ O., Westerville—SCHOOL—Westerville Bd. Educ., Westerville, $1,490,000 bond election Nov. 4, high school. CD 7/19/55.

▲ O., Westlake—SCHOOL—City, Bd. Educ., Dover Center Rd., bond election Nov. 4, school. $1,400,000.

▲ O., Wilmington—SCHOOL—Bd. Educ., City Hall, bond election Nov. 4, schools. $1,150,000.

▲ Pa., Hamburg—SCHOOL—Hamburg Jt. School Dist., Hamburg, high school. $2,875,000.

▲ Pa., Reading—SCHOOL—Reading School Bd., Reading, Special Educ. Center. $1,280,000; elementary school, $732,000.

▲ Pa., Schwenksville—SCHOOL—Schwenksville Pa. Area Jt. School Auth. plans by John S. Carver, 2112 Spruce St., high school addn. $1,000,000. Robert McLaughlin, 1411 Walnut St., Phila., Pa. consult. engr.

▲ Pa., Shillington—SCHOOL—Gov. Mifflin Jt. School Dist., Shillington, high school addn. $1,400,000.

▲ S. C., Charleston—AUDITORIUM—Greater Charleston Auditorium Comn., auditorium. $2,500,000. Cummings & McGrady, Champney's Alley, archts.-engrs. CD 7/15.

▲ Tex., Fort Worth—CITY HALL—City, City Hall, bond election Sept. 9, 6 story city hall addn. $1,550,000.

▲ Tex., Fort Worth—CIVIC AUDITORIUM—City, City Hall, bond election Sept. 9, civic auditorium. $8,500,000.

▲ Tex., Fort Worth—MUSEUM, etc.—City, City Hall, bond election Sept. 9, Western Museum and Western Town, $1,250,000.

▲ Tex., Fort Worth—POLICE STATION, JAIL—City, City Hall, bond election Sept. 9, police station and jail. $2,750,000. CD 11/29/56.

▲† Tex., Killeen—HOUSING—U. S. Eng., Commanding Officer, Fort Hood, Killeen, repair and imprvs. 568 units Wherry Housing, $1,638,144.

▲ Tex., Tyler—SCHOOL—Tyler Ind. School Dist., plans by E. D. Wilcox, 833 Beckman St., 2nd unit Junior High School, $1,000,000. CD 6/27.

▲ Utah, Ogden—HIGH SCHOOL—City Bd. Educ., 2351 Grant Ave., plans by Lawrence D. Olpin, Kiesel Bldg., Northside Junior High School $1,500,000. CD 5/2/56.

▲ Wash., Seattle—RESIDENCE HALLS—University of Washington., 15 Ave. N. E. and E. 40th St., plans by Young, Richardson & Carleton, Central Bldg., Zone 4, women's residence halls addn. $1,500,000. CD 12/24.

▲ Que., Montreal — SCHOOL — Provincial Secretary's Dept., Parliament Bldgs., commercial high school and administration, Maplewood Ave. $2,000,000.

COMMERCIAL BUILDINGS

▲ Ala., Huntsville—CHURCH, etc.—First Baptist Church, Huntsville, plans by Lawrence Whitten, Brown-Marx Bldg., Birmingham, church and auxiliary bldgs., $1,000,000.

▲ Calif., Baldwin Park—SHOPPING CENTER—Ray Conners, 9238 W. Olympic Blvd., Beverly Hills, shopping center, Ramona and Sierra Madre Blvds. $1,500,000.

▲ Calif., Pinole—HOMES—Patrick Fahey, 4538 Dam Rd., Richmond, 335 home subdivision, $4,000,000. Constr. Aug. 1, 1958. CD 4/19/55.

▲ Calif., San Francisco—APARTMENTS—Herbert Greenwald, Chicago, Ill., c/o Herman D. Ruth, planning consultant, 2409 Telegraph Ave. Berkeley, two 24 story apartment houses and parking garage between Hyde and Larkin Sts. $10,000,000.

▲ Conn., Bloomfield—MEDICAL CENTER—Sidney Neiditch, 1 Linbrook Rd., West Hartford, plans by Walter J. Douglas Assocs. 1009 Farmington Ave., West Hartford, colonial design medical center, Cottage Grove Rd. $1,000,000.

▲ Del., Wilmington — APARTMENT — Owner, c/o H. Albert Young, Equitable Security Bldg., 9 and Market Sts., plans by Milton Schwartz Assoc. & Alfred Polinger, 10 S. 18 St., both Phila., Pa. apartment, 1401 Penna Ave. $2,500,000. Julius Dorfman, 10 S. 18 St., Phila., Pa., engr. CD 4/30.

▲ Fla., Miami Beach—HOTEL—Fontainbleau Hotel Corp. 4441 Collins Ave., plans by A. Herbert Mathes, 628 Lincoln Lane, hotel addn., $5,000,000-$6,000,000. Obler & Clarke, 927 Arthur Godfrey Rd., consult. engrs.

▲ Ill., Peoria—MOTEL—Eldor Realty Co., c/o Merwin Rosenberg, 38 S. Dearborn St., Chicago, Zone 3, plans by Milton M. Schwartz & Assocs. 2709 W. Roosevelt St., Chicago, 4 story, 75-unit motel. $1,000,000. Completion, Fall 1959.

▲ N. J., Ellisburg—SHOPPING CENTER—Food Fair Properties, 99 Park Ave., New York, N. Y., plans by Neff & Evantash, engrs.-archts., 1520 Locust St., Phila., Pa., 27-store shopping center and parking area. $1,500,000.

▲ N. Y., Buffalo—PLAZA, etc.—Delaware Ave. Plaza, Inc., c/o Benderson Development Co., 123 Franklin Ave., Zone 2, Delaware Park Plaza addn., 60-lane bowling alley; 7-8 stores, 17,000 sq. ft. supermarket, parking facilities. $1,000,000.

▲ N. Y., New York—OFFICE—Blickman Corp., 565 5 Ave., will not construct 44 story Carneige Plaza Building, 7 Ave. and W. 57 St., $22,000,000. Project abandoned, CD 8/12/57.

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▲ **N. Y., New York**—APARTMENT—Cohen Bros. Realty & Constr. Co., 400 Madison Ave., Zone 17, 17 story apartment, 411 E. 57th St., $1,000,000. Constr. 1959.

▲ **O., Richmond Heights**—SHOPPING CENTER—Unnamed Corp. c/o George H. Burrows, 16104 Kinsman Rd., Cleveland, Zone 20, plans by Burrows & Hinman, 16104 Kinsman Rd., Cleveland, Zone 20, shopping center, Wilson Mills and Richmond Rds. $3,000,000.

▲ **Pa., Phila.** — MOTORIST HOTEL, etc. — Lloyd S. Schwenger and Milton T. Daus, Union Commercial Bldg., Cleveland, O., 101 unit motorist hotel, shops, stores, and parking area, Roosevelt Blvd. $1,000,000.

▲ **Tenn., Chattanooga**—OFFICE—Provident Life & Accident Insurance Co., 721 Broad St., plans by Selmon T. Franklin, 421 Poplar St., office building, $3,000,000-$3,500,000.

▲ **Tenn., Nashville**—APARTMENT—H. I. Gibson, c/o Medlin Realty Co., 1717 Hayes St., plans by John H. Doggett, 2916 Park Ave., Memphis, 188 unit apartment $2,000,000.

▲ **Tex., Arlington**—STORE—The Fair Dept. Store, 808 Throckmorton St., Fort Worth, plans by J. M. Williams Co., 3327 Winthrop St., Fort Worth, 1 story, brick, tile, concrete, steel and air conditioned suburban store in Park Plaza Shopping Center, $1,000,000.

▲ **Tex., Beaumont**—APARTMENTS—Dr. Jno. Hart, Howard Nicols, Waldo Wilson & D. Pat Wheat, 1872 Calder St., plans by Miles F. Wortham & Assocs., 4316 Dupont St., Houston, and Lars Bang, 244 Times St., Houston, No. 1, 8 story 80 apartments, in West Beaumont, $1,000,000; No. 2, 8 story apartment wing, $1,250,000. Miles F. Wortham & Assocs., 4316 Dupont St., Houston, engrs. CD 7/23.

▲ **Tex., Dallas**—SHOPPING CENTER—Dallas West (Shopping Center) Bobby Folsom, 3104 Oak Lane, plans by Boatwright & Thompson, 200 W. Colorado St., shopping center, $1,000,000. Ed. L. Wilson, 1810 Commerce St., and Wm. K. Hall, Exchange Bank Bldg., consult. engrs. CD 7/14.

▲ **Tex., El Paso**—SHOPPING CENTER—Bassett Shopping Center, c/o De Witt & Rearich, 1004 Hawkins Way, plans by Bartlett Cocke, 3501 Broadway, San Antonio, shopping center, $1,000,000.

▲ **Tex., Fort Worth**—HOSPITAL—Harris Hospital, c/o 1300 W. Cannon St., plans by Preston M. Geren, 1607 Fort Worth National Bldg., maternity hospital, $2,200,000; hospital addn., $1,500,000. CD 5/12/52.

▲ **Tex., Houston** — HOSPITAL — Northshore Hospital, 1000 Federal Rd., plans by Dean Eichelberger, 2 Chelsea St., 5 hospital wings. $1,250,000.

▲ **Tex., Houston**—APARTMENTS—Peachy Constr. Co., 1220 Witte St., apartments, near Palms Center, $1,750,000.

▲ **Tex., Houston**—CHURCH—Sharpstown Baptist Church, 2320 Willowick St., church in Sharpstown $1,000,000.

▲ **Utah, Sandy**—HOMES—Dupler's Mink Ranch, 9676 S. State St., 72 sheds, each 350 ft. long, 8 homes, 8th East St., $1,000,000.

▲ **Wash., Bellevue**—HOSPITAL—Overlake Memorial Hospital Assn., Bellevue, plans by Jones, Lovegreen, Helms & Jones, Republic Bldg., Seattle, 50 bed hospital, $1,300,000. Constr. in fall. CD 2/10.

▲ **Wis., Kenosha**—HOSPITAL—St. Catherine's Hospital, 3556 7th Ave., plans by Maguolo & Quick, 4908 Delmar St., St. Louis, Mo., hospital addn. $2,000,000.

▲ **Que., Montreal**—APARTMENT—Owner, c/o Peter Isserman, 5703 Milling Ave., Cote St. Luce, Montreal, plans by Ben-Ami Shulman, 5174 Cote des Neiges Rd., 5 story, 60x362 ft., 100 suite apartment, garage in bsmnt., Cote St. Luc Rd. $1,000,000.

▲ **Que., Repentigny**—SHOPPING CENTER—Repentigny Shopping Center. Plans by Robillard, Jette & Beaudoin, 5150 Queen Mary Rd., Montreal, shopping center, $1,000,000. Beaulieu, Trudeau & Assoc., 5810 Cote St. Luc St., Montreal, consult. engrs.

INDUSTRIAL BUILDINGS

▲ **Conn., New Haven**—FACTORY—Sargent & Co., 45 Water St., 1 story, 400,000 sq. ft. factory. $4,000,000.

▲ **Ill., Melrose Park**—WAREHOUSE—Louis Zahn Drug Co., 3250 Lake St., Chicago, 102,000 sq. ft. warehouse. $1,000,000.

▲ **Md., Kensington**—PLANT—Weinschel Engineering Co., Inc., 10501 Metropolitan Ave., electronics and research plant, south of B. & O. R.R. tracks. $1,000,000.

▲ **N. J., Cranbury**—PLANT, etc.—Carter Products, Inc., U. S. Highway 1 and George Rd., 250,000 sq. ft. plant and warehouse, Pharmaceutical Div. $3,500,000.

▲ **N. J., Florham Park**—PLANT, etc.—Strahman Valves, Inc., 16 Hudson St., New York, N. Y., 1 story, 90,000 sq. ft., brick, steel, glass plant and office, Nicolet Rd. $1,000,000.

▲ **N. J., Palmyra-Cinnaminson**—PLANT—Shell Oil Co., 50 W. 50th St., New York, N. Y.; resins and plastics plant, Rte. 130 and Delaware River. $2,000,000. CD 11/20.

▲ **Tenn., Greeneville** — FACTORY — Metals Engineering Corp., Greeneville, factory. $1,000,000. A. D. Wright, Greeneville, staff engr.

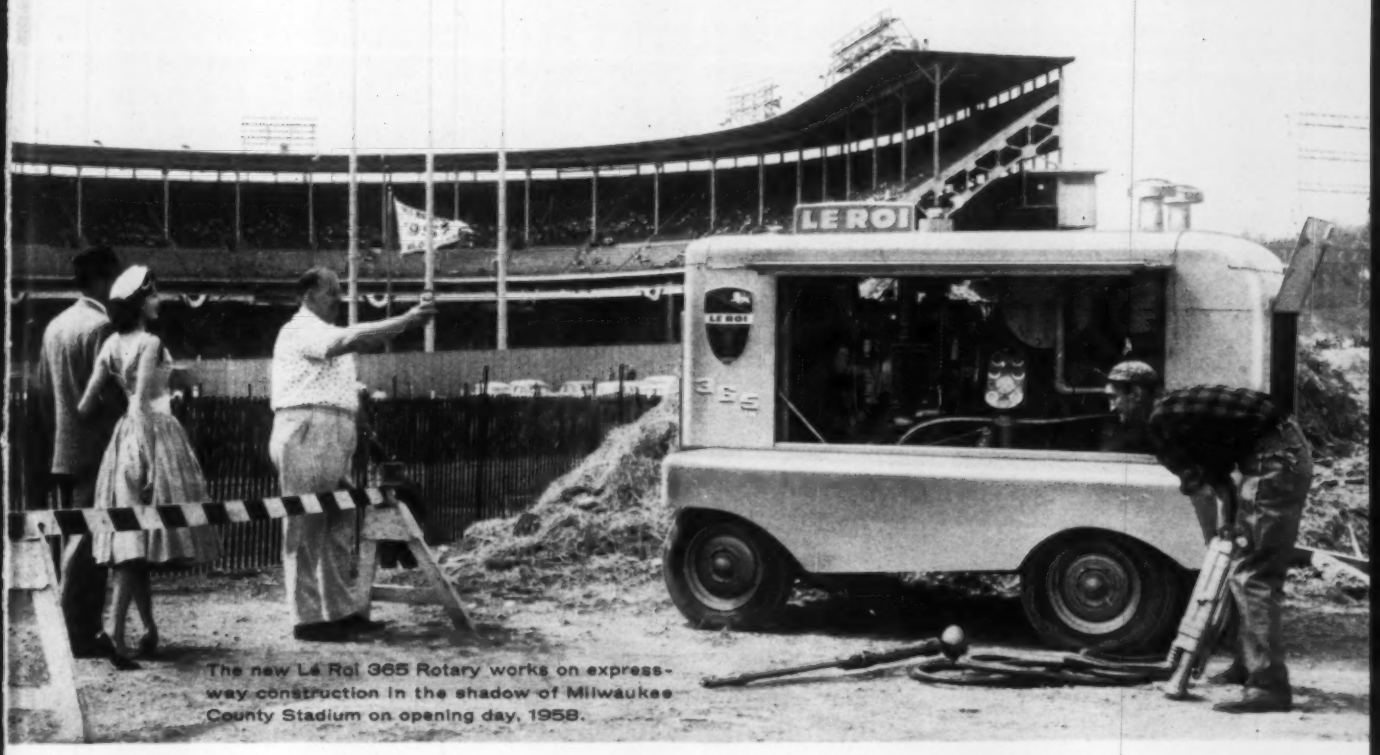
▲ **Tex., Sonora**—PLANT—Pioneer Gathering Sys., Inc., 301 Taylor St., Amarillo, cleaning plant 20 mi. NW of here. $1,000,000.

UNCLASSIFIED

▲ **Tex., Fort Worth**—PARK, RECREATION—City, City Hall, bond election Sept. 9, park dpt. addns., $1,500,000; recreation dpt. addns., $850,000. CD 9/17/51.

THE NEW LE ROI ROTARY 365

another world champion hits the construction field!



The new Le Roi 365 Rotary works on expressway construction in the shadow of Milwaukee County Stadium on opening day, 1958.

Delivers rated capacity at 1100 rpm —slowest speed rotary on the market!

You'll get new economy of operation — cheaper air — lower fuel and parts bills when you use the new Le Roi 365 Rotary for air power. That's because this brand new rotary loafs along at only 1100 rpm while delivering full rated 365 cfm at 110 psi. The results: Less wear and tear on the compressor, less frequent vane replacement—and a miser's grip on the fuel line!

Individually cast cylinders can be separately serviced or removed in-the-field without disturbing either tanks or piping. An accurate thermal by-pass on the compressor oil cooling system provides excellent oil temperature control. You get easy one-valve air pressure adjustment...and all filler caps and service valves are enclosed behind a sturdy, tamper-proof, lockable rear door. Contact your Le Roi distributor for complete information. Better yet, ask for a demonstration!

PC-801

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 11 Connecticut

STREETS AND ROADS

August 11 Connecticut August 12 Massachusetts
August 15 Vermont

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston, **Consolidated Bldgs. Inc. & Consolidated Constr. Co.,** Draper Ave., North Attleboro, Mass. (joint venture) CA **$5,895,823,** hy. and bridge constr., Worcester Expressway, FA Proj. 1-353 (3) Contr. B, Worcester. Bids June 24. CD 6/27, under LB.

▲ **White Oak Excavators, Inc.,** 61 East Main St., Plainville, Conn., LB **$4,782,145** (6 bidders) Proj. 42-105, East Hartford Expressway, High to Pitkin Sts., 2 mi. elevated hy. 4 lane High St. access to Willow and Main Sts., 6 lane Northerly, Hockanum River, EAST HARTFORD, CONN. CD 7/9.

BUILDINGS—LB & CA

▲ **Abner Rosenberg,** Inwood Rd., Woodbridge, Conn., Owner Builds. **$4,000,000,** 400 HOUSES, "High Ridge" EAST HAVEN, CONN.

▲ **Southern New England Contg. Co.,** 66 Sanford St., Hartford, Conn., CA **$3,265,000,** 5 story wing and 2 story addn. HOSPITAL, incl. main lobby, waiting room, admitting office, business offices, record room, 97 addnl. beds for patients. St. Francis Hospital, 114 Woodland St., HARTFORD, CONN. Bids 6/12. CD 7/2.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 15 Pennsylvania

STREETS AND ROADS

August 12 Maryland August 15 Pennsylvania
August 19 New Jersey

BUILDINGS—SLC

▲ **N. J., Linwood**—OFFICE—Prudential Life Insurance Co. of America, 763 Broad St., Newark, office bldg. with parking area. $3,000,000. Soon lets contract. Frank Grad, 1180 Raymond Ave., Newark, archt. Farkas & Barron, 150 Broadway, New York, N. Y., engrs. CD 6/26.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., Gov. Alfred E. Smith State Office Bldg., Albany,
S. J. Groves & Sons Co., Eastwood Station, Syracuse, N.Y., CA **$5,294,210,** 5.55 acc. mi. City of Rome: East Whitesboro St. Arterial; city of Rome; southerly Hy. Connections, Oneida Co. Bids July 5, awarded July 10. CD 6/6, under LB.

▲ **NEW YORK**—Dpt. P. Wks., Gov. Alfred E. Smith State Office Bldg., Albany,
N.Y.—**R. J. Marshall, Inc.,** 8 Church St., Wappenger Falls, N.Y., CA **$1,287,220,** 1.17 mi. Palisades Interstate Parkway, Sec. 1, (Queensboro Interchange), Orange Co.;
N.Y.—**Hendricksen Bros., Inc.,** 63 N. Central Ave., Valley Stream, N.Y., CA **$3,627,023.** 7 mi. Sunrise Highway Extension Cont. 1 (Phyllis Drive to Yaphank Ave.), Suffolk Co.;
N.Y.—**J. J. Haggerty, Inc.,** Rogers Ave., Westhampton Beach, N.Y., CA **$657,793,** 2.26 mi. Rte. 25, Mattituck to Greenport, Pt. 4, Suffolk Co.;
N.Y.—**Serafini Constr. Co., Inc.,** P.O. Box 265, Binghamton, N.Y., CA **$1,844,677,** 10.52 mi. Rte. 14, Gabriels Corners-Starkey, Pt. 2, S.H. 8399; Starkey-Dresden, Pt. 1, S.H. 8399; Starkey-Dresden, Pt. 2, S.H. 8353, Schuyler and Yates Counties;
N.Y.—**Draicchio & Caradori Constr.,** 192 Erie St., Lancaster, N.Y., CA **$769,881,** 7.68 mi., 0.338 acc. mi. Rte. 19, LeRoy-Pavilion, Pt. 1, S.H. 5538; LeRoy-Pavilion, S.H. 5582A; LeRoy-Pavilion, Pt. 2, S.H. 5582, Genesee Co. Grand total $8,186,594. Bids June 5, awarded July 3, CD 6/6, under LB.

▲† **Drake Merritt, Inc.,** 111 4 Ave., New York, N. Y., CA **$2,202,309** (1) readiness crew bldg. (2) 2 story civilian dormitories (3) shop A/C engine inspection and repair (4) ground powered equip. shop, Goose Air Force Base, ENG-30-347-58-13, GOOSE BAY, LABRADOR. U. S. Eng., Eastern Ocean Dist., 346 Broadway, New York 13, N. Y. Bids June 24. CD 7/18, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., Kenneth D. Rice, secy., 1055 Parkway Ave., Trenton, Bids opened 7/29, **Franklin Contg. Co.,** Little Falls, N. J., LB **$4,106,170** (6 bidders), constr. west and east viaduct crossings of Raritan River for Middlesex East-West Freeway section of Interstate Rte. 104, Middlesex and Somerset Counties. CD 7/7.

BUILDINGS—LB & CA

▲ **H R H Constr. Corp.,** 579 Fifth Ave., New York 17 N. Y., CA **$2,157,500,** CIVIC CENTER GARAGE Adams, Jay, Johnson and Willoughby Sts., BROOKLYN N. Y. Dpt. P. Wks., Rm. 2200, Municipal Bldg. New York 7, N. Y. Bids July 9. CD 7/14, under LB

▲ **Poirier & McLane Corp.,** 33 W. 42 St., New York 36 N. Y., CA Over **$3,000,000,** foundation for conventional POWER PLANT at Indian Point Reactor Plant, PEEKSKILL, N. Y. Consolidated Edison Co. 4 Irving Pl., New York 3, N. Y. Bids June 12.

▲ **Joseph F. Hughes & Co.,** 5 E. Franklin, Baltimore Md., LB **$2,718,400** (10 bidders), 2 CELL BLOCKS and WALL for new City Jail, BALTIMORE, MD. City Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids July 30. CD 7/23.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **GEORGIA**—State Hy. Dpt., 2 Capitol Sq., Atlanta, **Hugh Steele, Inc.,** Box 398, Centre, Ala., CA **$2,748,553,** grading, 4-lane paving, one double stream bridge, 1 double, 3 single hy. grade separations, Tifton-Cordele Rd., Fed. Aid Proj. I-401-1 (12) Turner Co. Bids Mar. 14. CD 3/19, under LB.

ALABAMA—H. L. Nelson, dir. State Hy. Dpt., Montgomery, Bids opened 7/25.
Ala.—**Ashburn & Gray,** Huntsville, Ala. LB **$312,985,** base and bit. 7.442 mi. road from West Point toward Moulton, Cullman and Morgan Counties;
Ala.—**Harbert Constr. Corp.,** 2200-8th Ave. S., Birmingham, Ala. LB **$3,016,980.** grade, drain 6.096 mi. from west of Fort Payne NE Int. Rte. 59, De Kalb C. CD 7/16.

▲ **TENNESSEE**—State Hy. Dpt., Nashville, Bids opened July 25,
Tenn.—**Foster & Creighton,** American National Bank Bldg., Nashville. LB **$534,917** c. conc. 3.251 mi. State Rte. No. 1, DF-001-9 (26) Sullivan Co.; LB **$1,598,669,** grading, 2 conc. deck girder bridges, b. conc. paving 0.723 mi. State Rte. 27 (Spur), U-027-1 (2) Hamilton Co.;
Tenn.—**McDowell & McDowell,** Murfreesboro Rd., Nashville, Tenn. LB **$960,139,** grading, 3 bridges, grav. or chert cement stab. base, bit. paving 3.532 mi. State Rte. No. 1, Proj. F-001-3 (23) Humphreys Co.;
Tenn.—**Moss-Thornton,** Leeds, Ala. LB **$1,565,502.** grading, drainage 4.889 mi. Inter State Rte. 24, I-24-2 (4) 76, Grundy Co.;

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Tenn.—**Oman Constr. Co.**, Acklen Park, Nashville, Tenn. LB **$2,910,650.** grading, drainage, 9 bridges, 7.521 mi. Interstate Rt. No. 40, I-40-1 (7) 79, Madison Co.;
Tenn.—**Tillett Brothers Constr. Co.**, Shelbyville, Tenn. LB **$938,629.** grading, drainage 6.178 mi. Interstate Rte. No. 40, I-407 (6) 365, Loudon and Knox Counties;
Tenn.—**Burns & Baker**, 726 16 Ave. S., Nashville, Tenn. LB **$1,467,283.** grading drainage, 1 precast, prestressed concrete girder bridge 3.262 mi. Interstate Rte. 40, I-40-6 (6) 271, Putnam Co.;
Tenn.—**R. G. Pope Constr. Co.**, Bristol, Tenn. LB **$995,552.** bit. paving 7.111 mi. relocated State Rte. 1, DF-001-9 (27) Sullivan Co.;
Tenn.— **Ralph Rogers Co.**, 720 Argyle Ave., Nashville, Tenn. LB **$1,013,917.** wid'n. existing roadway, wid'n., resurf. with bit 17.792 mi. State Rte. 41, DF-041-1 (8), Sumner Co. CD 7/9.

BUILDINGS—LB & CA

▲ **Folmar & Flinn**, 10 W. Patton Ave., Montgomery, Ala., Owner Builds. **$7,000,000.** 1,000 RESIDENCES, MOBILE, ALA.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 19 Ohio — August 20 Michigan

STREETS AND ROADS

August 13, 20 Michigan — August 19 Ohio

▲ **Ind., Michigan City**—BA 8/26—City, City Hall, pumping station, filter plant, sanitary sewers and intake crib. $2,765,000. Boyd E. Phelps, Inc., 1000 Washington St., engrs. CD 3/6/57.

BUILDINGS—SLC

▲ **Ind., Indianapolis**—LABORATORY—Eli Lilly & Co., Alabama and McCarty Sts., soon lets contract, research laboratory, 645 South Alabama Ave., $2,500,000-$3,500,000. Allied Architects & Engineers, Inc., 1537 Central Ave., Zone 2, archt.-engr. CD 4/29/57.

HEAVY CONSTRUCTION—LB & CA

▲ **Contracting & Materials Co.**, 1235 Dodge St., Evanston, Ill. CA constr. 265 mi. 12 in. pipe line, capacity from 90,000-100,000 bbls. per day to carry refined products between Harford-Wood River, Ill. area and Griffith, Ind. area, ILLINOIS and INDIANA. Wabash Pipe Line Co., c/o The Ohio Oil Co., 539 S. Main St., Findlay, O.

▲ **ILLINOIS**—State Div. Hys., Centennial Bldg., Springfield. Bids opened July 29.

Ill.—**S. J. Groves & Sons Co.**, 1104 E. Reynolds St., Springfield, Ill. LB **$3,120,020** (6 bidders) paving FA 14 near Belleville and ramps and reconstr. Ill. 13 and U.S. 460, St. Clair Co.; LB **$2,178,896,** dual lane c. conc. paving 5.78 mi. FA 1-5 near St. Joseph, Champaign and Vermillion Counties;

Ill.—**Erie Bolander Constr. Co.**, Winchester Rd., Libertyville, Ill., LB **$748,539** (4 bidders) paving 2.19 mi. and 2 bridges FA 113 at terminus of East-West Toll Rd. and U.S. 30, Kane Co.;

Ill.—**Jansen & Schaefer**, 1600 Broadway, Pekin, Ill., LB **$977,373** (1 bidder) c. conc. paving and 3 interchanges 1.54 mi. FAI Rt. 5. East Peoria, Tazewell Co. CD 7/17.

▲ **MICHIGAN**—State Hy. Dpt., John C. Mackie, State hy. Cmr., Stevens T. Mason Bldg., Lansing. Bids opened 7/23.

Mich.—**Cross & White**, 349 3-Mile Rd., Grand Rapids, Mich., LB **$769,666** est. $900,000 (16 bidders), dual 24 ft. concrete pavement 0.776 mi., ramps and approaches and one grade separation structure US-31 from 1,374 ft. south of intersection US-31 and US M-21 north to County Rd. 452, BF 70021 C2-RN (F 155 30) DF B3 of 70-7-3 C1 R1 (F 155 30), Ottawa Co.;

Mich.—**A. J. Rehmus & Son** and **W. F. McNalley Co.**, Bridgeport, Mich., LB **$454,847,** est. $510,000, 0.966 mi. grading, drainage structures, dual concrete pavement curb, gutter, bridge approaches relocation M-46 from Gratiot to Washington St. U73062 C1-U (U 206 9), Saginaw Co.;

Mich.—**L. A. Davidson**, 213 E. St. Joseph, Lansing, Mich., LB **$1,885,326,** est. $2,050,000 (15 bidders), double dual concrete pavement 4.51 mi. Interchange ramps and 3 bridges relocation US-12 BI 38102 C1-RN (I 02-3 20 B1 B1 of 38-11-4 C1-RN BI B2 of 38-11-4 C1-RN B3 of 38-11 4 (C1 I 02-3 20) 38102, Jackson Co. CD 7/11.

▲† **Western Contg. Co.**, 400 Benson Bldg., Sioux City, Iowa. CA **$9,551,952,** airfield pavements, lighting, fuel facilities, roads and streets. SELFRIDGE AIR FORCE BASE, MICH. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids July 23. CD 3/12.

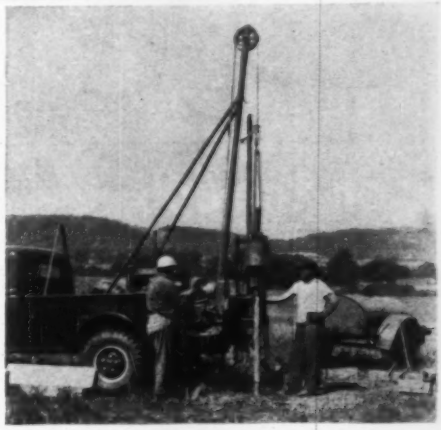
BUILDINGS—LB & CA

▲ **Edward J. DeBartolo & Assoc.**, 2640 Market St., Youngstown, O. Owner Builds. **$2,000,000.** SHOPPING CENTER, Coventry Plaza Center with 850 ft. front and 130,000 sq. ft. space for 20 stores, paved parking for 1,000 cars. AKRON, O. CD 4/19/56.

▲ **Bay Gardens Estates**, 462 Lane Dr., Bay Village, O. Own Forces, **$3,000,000.** 60 ranch HOMES, beyond west end of Wolfe Rd., BAY VILLAGE, O. Andrew Burin, 21055 Lorain Rd., Cleveland 26, O., archts.

▲ **Kesk, Inc.**, 136 Derbigney St., New Orleans, La.,

DEPENDABLE SOIL SAMPLING EQUIPMENT IS NO PROBLEM FOR THIS DRILL CREW



With a contract to obtain representative samples of the soil strata along the center line of an important link on the new Interstate Highway System, this contractor is using the S&H Split Barrel Sampler for recovering samples in this immediate area. At the next location, sampling for a bridge foundation, the S&H Shelby Tube Sampler will be utilized to recover the undisturbed samples that are necessary.

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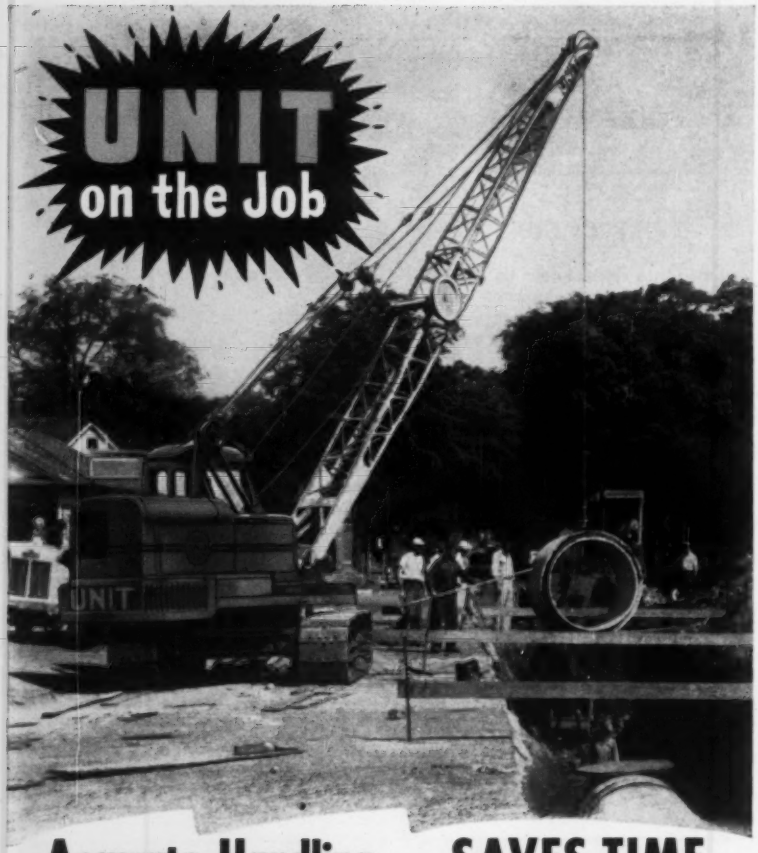

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CA $4,957,730, CH 1-5-119, 2 story, masonry HOUSING UNITS, MAINTENANCE, MANAGEMENT and RECREATION BLDG., site imprvs., COLUMBUS, O. Columbus Metropolitan Housing Auth., 425 W. Rich St., Columbus 22, O. Bids June 10. CD 5/15.

▲ **United States Steel Corp.**, 79 Broadway, New York, N. Y., no such project to be constructed, primary and structural Mill at Chicago's South Works, 8135-65 Brandon St., CHICAGO, ILL. Est. $120,000,000. (Correction—no such project). CD 7/14, under CA.

▲ **South Town Constr. Co.**, 7937 S. Exchange Ave., Chicago, Ill., CA $3,600,000, 200 HOMES, Craig Manor Subd., 154th and Ellis, DOLTON, ILL. Simpson Home Developers, Inc., 1937 S. Exchange Ave., Chicago, Ill.

▲ **Superior Home Development Co.**, 340 W. Hawley St., Mundelein, Ill. Own Forces. $4,200,000, 300 HOMES, Hawley Rd., 2 blocks west of Lake 990, MUNDELEIN, ILL. Jerome Soltan, 2911 Touhy Ave., Chicago, Ill., archt.

▲ **Fred Berglund & Son, Inc.**, 8410 S. South Chicago Ave., Chicago, Ill., CA $5,530,084, part 1 and 2 story brick, West Maine High SCHOOL, Oakton Wolf Rd. and Howard Ave., PARK RIDGE, ILL.; School Dist. 207, Dempster St. and Potter Rd., Park Ridge, Ill. Bids June 18. CD 6/23.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 19, 20 Texas
August 27 South Dakota

STREETS AND ROADS

August 14 Kansas
August 19, 20 Texas
August 27 South Dakota

BUILDINGS—BA

▲ **Minn., Bloomington (P. O. Minneapolis)**—SCHOOL, etc.—BA 8/14—Bd. Educ., 2 story, 185 x 190 ft. Junior High School, Ninetieth St. and Portland Ave., swimming pool, etc. $2,400,000. Plans deposit $50. for general. Armstrong & Schlichting, 2722 Park Ave., Minneapolis, archts. CD 5/28.

▲ **Minn., Roseville (P. O. St. Paul)**—SCHOOL—BA 8/28—Bd. Educ., Capitol View Junior High School, County Rd. B2 and Rice St. $2,000,000. Plans deposit $25. Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, archts. CD 4/2.

HEAVY CONSTRUCTION—LB & CA

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5

Metropolitan Paving Co., 300 S. Indiana St., Oklahoma City 4, Okla. CA $1,336,207, stab. aggreg. base, b. conc. surf. 1.519 mi. I-40, Tinker Field; CA $2,159,610, stab. aggreg. base, b. conc. surf. 3.09 mi. I-40 diagonal road to Tinker Field; CA $788,388, relocation of utilities and clearing right of way I-40, near Tinker Field, all in Oklahoma Co. Grand total, $4,284,206. Bids June 30, awarded July 14. CD 7/22, under LB.

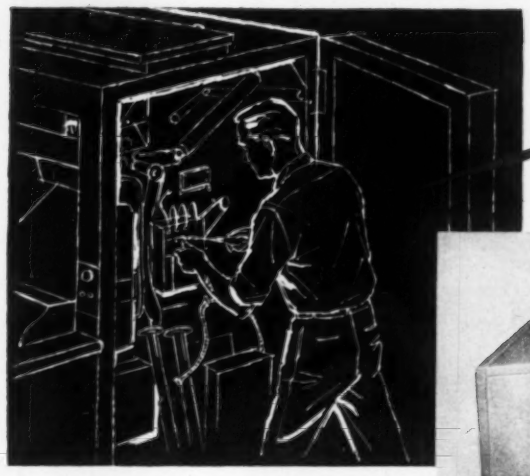
▲ **MONTANA**—State Hy. Comm., Helena, Mont.—**Bud King Constr. Co.**, Missoula, Mont. and **McLaughlin Inc.**, Ford Bldg., Great Falls, Mont. CA $2,456,635, grade, surf., oil, drain 9.623 mi. Bearmouth-Deer Lodge Rd. Granite and Powell Counties;
Mont.—**Nilson-Smith Constr. Co.**, 800 2 St., Great Falls, Mont. CA $1,042,632, grade, surf., oil, drain, 4.991 mi. Tarkio-Missoula Rd., Mineral Co.;
Mont.—**Wickens Bros.**, Suffolk, Mont. CA $444,589, grade, surf. oil and drain 5.773 mi. Wyoming Line-Bridge Rd., Carbon Co.;
Mont.—**M. D. Robinson**, Missoula, Mont. CA $239,699 grade, drain 0.266 mi. Kalispell-Whitefish Rd., Flathead Co.;
Mont.—**R. J. Sundling**, Livingston, Mont., CA $88,222 reshape, surf. 5.614 mi. Cardwell-Boulder Rd., Jefferson Co.;
Mont.—**Billings Constr. Co.**, 1345 Ave. E., Billings, Mont. CA $288,200, grade, surf., drain 4.54 mi. Cardwell southeast Rd., Madison Co.;
Mont.—**Dean R. Rounds**, 1110 W. Main St., Rapid City, S. D. CA $166,873, surf., oil 9.121 mi. Wyoming line-Broadus Rd., Powder River Co.;
Mont.—**Albert Lalonde Co.**, Sidney, Mont. CA $196,779, reshape ,surf., oil 12.703 mi. Wolf Point-north road, Roosevelt Co.;
Mont.—**S. Birch Constr. Co. & S. Birch Sons**, Ford Bldg., Great Falls, Mont. CA $415,834, grade, surf., oil 20.146 mi. Shelby-Chester Rd. and gravel backfill on Main St., in Shelby, Toole Co.;
Mont.—**Witty Constr. Co. & Western Utility Co., Inc.**, 2512 8 Alley N., Great Falls, Mont. CA $119,246, grade, surf., drain 6.569 mi. Sunburst-Sweetgrass-westerly loop road, Toole Co. Grand total $5,512,709. Bids July 23. CD 7/9.

BUILDINGS—LB & CA

▲ **Westinghouse Electric Corp.**, 3 Gateway Center, Pittsburgh, Pa. CA Total est. $56,000,000. 325,000 kw TURBINE GENERATOR for 1960 delivery for use in new power plant to be located on Mississippi River, HELENA, ARK. Arkansas Power & Light Co., 4th and Louisiana Sts., Little Rock Ark. CD 2/12.

▲† **George A. Rutherford**, Box 1538, Albuquerque, N. M. CA $3,502,500, 213 unit Capehart HOUSING, Sandia Base, Inv. No. ENG-29-005-58-8, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 8. CD 4/23, under LB.

(Continued on page 102)



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More Operator Conveniences. Modern Copyflex gives printing widths up to 54" to simplify feeding of large tracings, facilitate multiple feedings. Extra-large delivery trays, automatic separation, automatic stacking, and front-or-rear delivery further speed operator's work.

Faster Mechanical Speeds. New models offer sharply increased speeds—up to 30% faster than before. Synchronized exposure and development assure top quality prints, one knob control simplifies operation.

Sharp, Uniform Prints. Developing solution is applied directly to exposed print assuring complete, positive development at all speeds and on all types of materials.

Problem-Free Installation and Operation. Clean, quiet, odorless . . . Copyflex requires no vents or plumbing, needs only an electrical connection for operation.

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In Canada: 105 Church Street, Toronto 1, Ont.

Please send me booklets on ☐ model 35 ☐ Copyflex process and machines.

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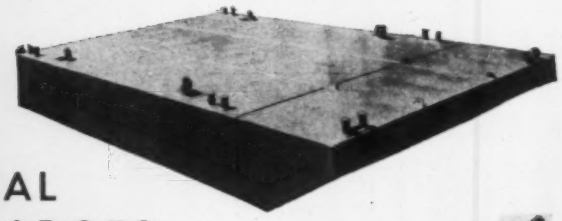
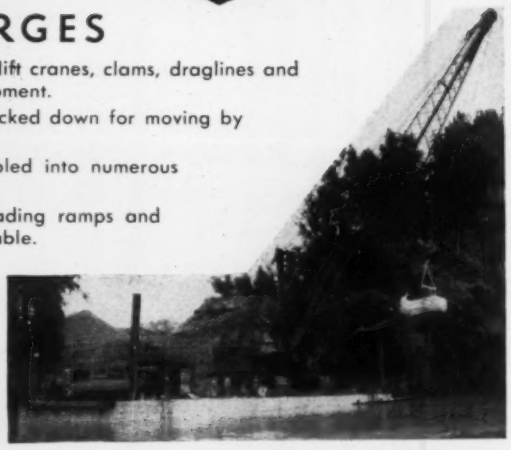
MANITOWOC

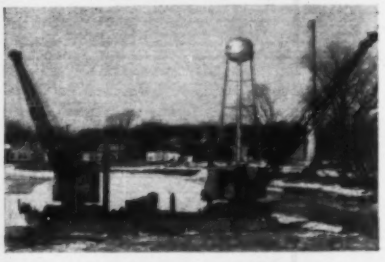


SECTIONAL BARGES

- For floating all sizes of lift cranes, clams, draglines and other contractors' equipment.
- Easily assembled or knocked down for moving by rail or highway.
- Sections can be assembled into numerous barge sizes.
- Spuds, deck fittings, loading ramps and other accessories available.



Photographs illustrating a few of the many successful operations using Manitowoc Sectional Barges. Economy and flexibility are outstanding features.



PORTA-FLOATS

• THE FLOAT WITH A 1000 USES •

The Manitowoc Porta-Float is the smaller version of the sectional barge. The standard basic float is 32′ x 8′ x 4′. Units can be pinned together to make a wide variety of sizes and arrangements. Economical and versatile for floating all types of contractors' equipment. Ideal for floating docks piers, etc. Porta-Floats are easily transported on trucks as illustrated below.

PORTA-FLOATS & SECTIONAL BARGES *MANUFACTURED BY*

MANITOWOC SHIPBUILDING INC.

MANITOWOC, WISCONSIN

Please write for additional information and prices.

Sold direct or through Manitowoc Engineering Corporation distributors.

(Continued from page 100)

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 27, 28 California

STREETS AND ROADS

August 13, 19, 20 California

BUILDINGS—BA

▲ **Calif., Los Angeles**—SCHOOL—BA 8/22—Bd. Educ., 1425 S. San Pedro, constr. Maclay Junior High School. $2,400,000. Mason, Muntz & Assocs., 4575 Pacific Blvd., Vernon, archts. CD 6/9.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 7/30,

McCammon-Wunderlich Co. and Wunderlich Constr. Co., P.O. Box 359, Palo Alto, Calif. LB **$4,140,558** (5 bidders) grading, paving 3.7 mi. 4 lane freeway U.S. 99 from 1 mi. south of Shasta-Siskiyou Co. line to Sacramento River Bridge in Dunsmuir, incl. 6 bridges, 11-Sha, Sis-3, D.A. DMR, Shasta and Siskiyou Counties. CD 6/25.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 7/30,

R. M. Price Constr. Co., 2285 Pine Crest Dr., Altadena, Calif. LB **$3,205,968** (12 bidders) 2,466 ft. rein.-con. bridge over Yuba River, Western Pacific R.R. and 1st St. at E St. in Marysville providing for 4 lane divided hy., 111-Yuba-3-B, MV1, Yuba Co. CD 7/2.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif. CA **$6,946,992.** grading, paving to constr. 11.5 mi. 4 lane divided freeway and 12 bridges US Hy. 40 between ½ mi. east of Roseville and mi. east of Newcastle 111-Pla-17A, Roc, B. Placer Co. Bids July 16, awarded July 28. CD 7/18, under LB.

▲ **Gibbons & Reed,** 825 W. 9th St. N., Salt Lake City, Utah. LB **$2,176,395** (12 bidders) Ice House Dam, rockfill impervious course type with crest length of 1,500 ft. dikes and access roads, Upper American River Proj., El Dorado Co., Inv. 2202, SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., 1708 59th St., Sacramento, Calif., Bids July 30, CD 7/7;

Marin Rock & Asphalt Co., P.O. Box 675, Novato, Calif. LB **$1,322,340** (3 bidders) furnishing 300,000 tons concrete aggreg. and filter material for Ice house dam (Sacramento, Calif.)

BUILDINGS—LB & CA

▲† **Curtiss-Wright, Industrial & Scientific Products Div.,** Quaker Bldg. Rd., Plainsboro, N. J. CA Est. **$2,000,000.** (Ralph M. Parsons Co., 617 S. Olive, Los Angeles, Calif., major subcontractor), develop, design, constr. and test operate gamma facility to be known as the HIGH INTENSITY FOOD IRRADIATOR (HI-FI) at Sharpe General Depot for Quartermaster Corp., Irradiated Products Inc. (Continental Can Co., Armour & Co., General Foods & Food Machinery and Chemical Co.) is in charge of production, planning facilities, LATHROP, CALIF. Atomic Energy Comn., 518 17th St., Oakland 12, Calif. Bids May 16. CD 7/3, under LB.

▲ **R. J. Daum & Beyer & Abrahamson,** 12537 S. Cerise Ave., Hawthorne, Calif., LB **$3,104,000.** (4 bidders), Granada Hills HIGH SCHOOL, Zelzah St., LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids July 25. CD 7/3.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 12 Manitoba August 27 Ontario

STREETS AND ROADS

August 13, 27 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ **Carter Constr. Co., Ltd.,** 419 Cherry St., Toronto, Ont., LB **$8,689,729,** air force refueling base, Baffin Island; LB **$5,500,549,** addnl. development, incl. strengthening and widening to 200 ft. existing 6,000x150 ft. runway and extension to 9,000 ft., incl. paved overshoots, taxiways and parking aprons, etc., R.C.A.F. Station, FROBISHER BAY, N.W.T. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids July 22. CD 6/30.

▲ **Queensview Constr. & Development Ltd.,** 525 Bank St., Ottawa, Ont., LB **$3,441,865** (15 bidders) filtration plant, Brittania to pump 421 m.g.d., OTTAWA, ONT. Bd. Control, City of Ottawa, City Hall, Ottawa, Ont. Bids July 22. Gore & Storrie Ltd., 1130 Bay St., Toronto, Ont., engrs. CD 6/25.

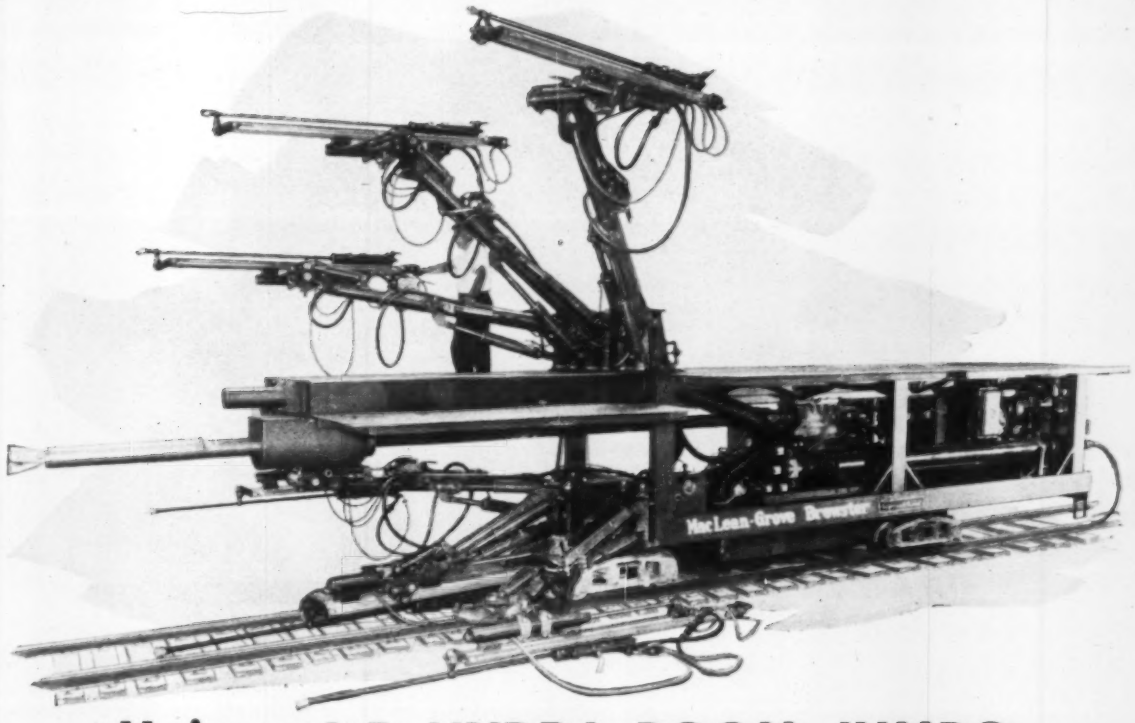
U. S. POSSESSIONS

BUILDINGS—LB & CA

▲ **Y. Ogami & Co.,** 1754 Waiola St., Honolulu, T.H., CA **$2,450,000,** 13 story, 304-unit co-operative APARTMENT, HONOLULU, T.H. Kep Alufi, 738 Mekapu Rd., Honolulu, T.H. E. L. Bauer, 1521 S.

(Proposal Advertisement see pp. 118 to 120)

ON THE DELAWARE AQUEDUCT . . .



Unique I-R HYDRA-BOOM JUMBO

is putting in two rounds per shift on a 14′ bore

JUMBO DESIGN INCLUDES:

- Down-The-Hole Drill with 8″ Bit for the Burn Cut
- Six Hydra-Boom Mounted Drifters with Remote Controls
- Air Pre-Heater for Elimination of Fogging

The Ingersoll-Rand drill jumbo shown above is one of two units designed for MacLean-Grove Brewster, contractor for the 44-mile tunnel which will bring water from the Delaware River storage reservoir to New York City. Incorporating several important innovations in tunneling practice, this I-R jumbo is currently putting in two rounds per 8 hour shift in the 14′ bore tunnel.

With a fixed-position Down-The-Hole drill, the machine drills an 8″ diameter burn cut 12 feet deep in one pass before the rest of the round is put in. This large burn cut assures pulling a complete 12-foot round and effects a saving in powder.

The blast holes are put in with six Hydra-Boom mounted DB-35 power feed drifters. All boom motions, including power dump and swing, are controlled by heavy-duty hydraulic cylinders. Remote controls for each drill permit safe operation away from the face.

Another unusual feature is a specially designed air pre-heater which eliminates all fogging—keeps the heading clear and contributes to increased safety and higher production. The preheated air also gives more work per cubic foot because its volume has been increased by heating.

This is an interesting example of Ingersoll-Rand's ability to design and build drill jumbos to meet the specialized requirements of any tunneling or mining job. Ask your I-R man for complete information, or send for a copy of new Bulletin No. 4196.

Ingersoll-Rand

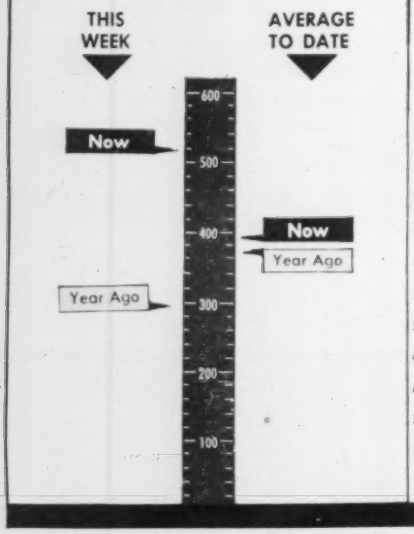
S-757 11 Broadway, New York 4, N.Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

Construction Scoreboard

ACTIVITY THIS WEEK

Contract Awards
Millions of Dollars

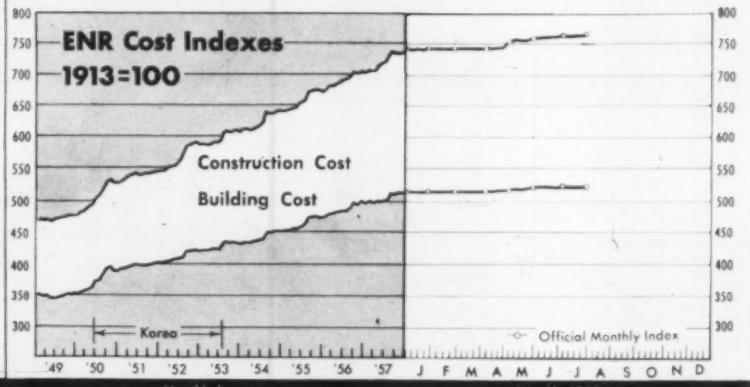


COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of July 31 1958	% Change from July 3 1958	% Change from Aug. 1 1957
Construction Cost	764.44*	+0.25	+3.5
Building Cost	525.62*	+0.25	+1.7

*Official Monthly Index for August 1958.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 1.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 32 wks 1958 millions	Cum. 32 wks Chge '57-'58 %
All Heavy Constr.	$514.0	$12,623.9	+8
Private	212.6	5,206.6	−4
Public	301.4	7,417.3	+17
State & Municipal	242.2	5,272.2	+14
Federal	59.2	2,145.1	+25
By Type of Work			
Public			
Waterworks	10.1	209.3	−9
Sewerage	7.1	370.7	+5
Bridges*	17.5	442.4	−5
Highways	134.1	2,078.2	+5
Earthwork, Waterways	22.0	748.7	+10
Buildings, Excl. Housing	45.5	1,688.9	+20
Housing	22.0	883.6	+105
Unclassified	43.1	1,004.2	+28
Private			
Mass Housing	75.5	2,483.8	+30
Commercial	26.2	1,200.0	+7
Industrial	97.7	1,226.8	−31
Unclassified	13.2	287.3	−7

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of July 31	Cum. 31 wks 1958 millions	Cum. 31 wks Chge '57-'58 %
Corporate Securities	$95.8	$3,464.8	−5
State and Municipal:			
All Except Housing	111.4	4,036.9	+26
Housing	...	33.8	−78
Federal Loans	9.5	119.6	−23
Federal Aid	...	....	−100
Total Nonfederal	$216.7	$7,655.0	−18
Federal Appropriations:			
Projects in U. S.	...	$849.5	+105
Outside U. S.	...	6.3	−72
Total New Capital	$216.7	$8,510.9	−13

WAGE RATES, 20-cities average

	Aug. 1958	% Change from July 1958	% Change from Aug. 1957
Common	$2.468	+0.2	+5.7
Skilled (average 3 trades)	3.726	+0.2	+4.0
Bricklayers	3.989	0	+4.2
Structural Ironworkers	3.709	+0.5	+3.2
Carpenters	3.481	+0.1	+4.5
Equipment operators (average three types)	3.386	+0.5	+5.5

MATERIAL PRICES, 20-Cities average

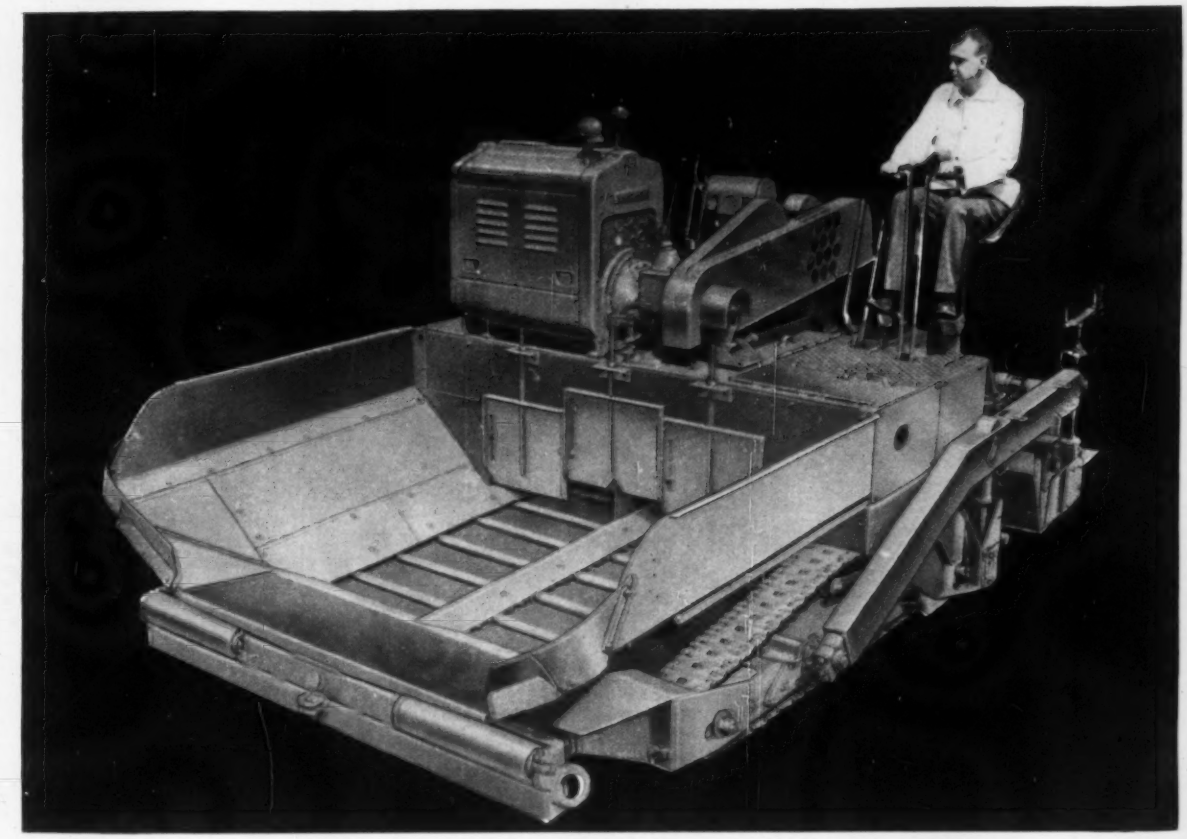
Structural Steel (average 3 mills), per cwt	5.275	0	0
Lumber, 2x4 Fir, per M fbm	114.350	+0.9	−1.9
Lumber, 2x4 Pine, per M fbm	101.480	+0.9	−0.1
Cement, bulk, per bbl	3.970	0	+1.3
Sand, per ton	2.501	0	+0.6
Ready-mixed concrete, per cu yd	13.796	−0.5	+0.9
Gypsum sheathing, ½"x2'x8', per Msf*	62.876	+0.1	−0.2
Fiber board sheathing, ½" sq. ed., per Msf*	71.370	−0.1	+0.1
Mineral wool insulation, 3' batts, per Msf*	70.513	0	−0.1
Crushed stone, 1½", per ton, CL	2.838	0	+1.5
Concrete blocks, sand/gravel, 8"x8"x16", each*	.228	0	+0.4

	July 1958	June 1958	July 1957
Brick, common per M	37.480	0	−0.5
Lime, hydrated finishing, per ton, CL	38.713	0	+6.9
Structural clay tile, 3x12x12", per M, 2,000 up*	185.403	0	+2.5
Vitrified clay sewer pipe, std 12", per ft	1.275	+0.4	−3.0
Concrete sewer pipe, 12", per ft	1.290	0	+11.0

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
1957						
Aug	738.63	154.84	516.90	146.93	528	153
Sept	737.78	154.66	516.12	146.71	466	135
Oct	737.14	154.53	516.78	146.90	506	146
Nov	737.43	154.59	516.81	146.91	457	132
Dec	738.08	154.73	516.27	146.76	357	103
1957 Average	723.85	151.74	508.67	144.59	517	150
1958						
Jan	743.44	155.85	516.79	146.90	368	106
Feb	743.77	155.93	515.78	146.61	446	129
Mar	744.41	156.06	516.09	146.69	520	150
Apr	745.78	156.34	516.61	146.85	585	169
May	751.57	157.56	513.48	147.38	674	195
Jun	757.31	158.77	521.09	148.12	661	191
Jul	762.52	159.85	524.29	149.03	705	204
Aug	764.44	160.26	525.62	149.41	...	...



The new Barber-Greene Model 879-B Asphalt Finisher offers many new advantages. Write for literature.

New Barber-Greene Finisher gives higher speeds, greater tonnage, lower costs

The new Barber-Greene Model 879-B Finisher gives fastest, lower-cost asphalt paving.

New faster paving speeds — 45% faster paving speed plus wide speed selection to match all conditions and all plant capacities.

New faster travel speeds — four miles per hour, both forward and reverse. No time consumed in maneuvering on job, turning around for runbacks.

60% greater hopper capacity — no dead areas. Hopper feeds all material to spreading screws.

New high-speed tamper — gives 25% speed increase for faster paving, longer life, greater compaction.

New engine and transmission — provide 25% more power . . . top capacity for every paving application, with reserve for heavy trucks and steep grades.

New crawler design — gives maximum traction on all bases, maximum maneuverability, increased life, less maintenance, smoother operation.

New longer-life screed — special abrasion-resistant, heat-treated alloy steel.

New screed heater — gives quick, even heat and automatic ignition.

Other features of the new Barber-Greene 879-B Finisher: automatic leveling • ingenious thickness control • fast crown adjustment while paving • dual controls, with new dual master and tamper clutch levers • full visibility of entire paving operation • easy, accurate control of material flow • three adjustable hopper gates • basic 10′ paving width variable from 8′ to 14′ • heavy-duty design and rugged construction • quick, easy lubrication • adjustable charging height • lays all asphalt mixes • world-wide parts and service.

Write for literature on the outstanding asphalt paving machine. 58-37-F

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Around-the-World Construction Outlook

With some exceptions, foreign construction is weakening, a new ENR survey shows.

Some areas, such as Europe, now are feeling the effects of the recession in the U.S. Latin America is having its own recession. The Middle East crisis makes the outlook there cloudy. Asia and Australia show signs of a decline.

Cost trends are as varied as the nations, with strong contradictory movements. Within one area, labor costs can be lower while material prices are on the rise. Here's the picture around the world:

1. Middle East and Africa

Rebellion, revolution, recession and inflation are the Four Horsemen trampling these two areas.

• **Iraq – Construction volume may not be threatened by the revolution,** but the new anti-Western government could be inclined to throw more work toward the Soviet bloc (ENR July 24, p. 23). The new regime indicates it will continue Development Board projects under way; but it may drop some public works projects, such as Frank Lloyd Wright's Baghdad opera house. There may be more emphasis on industrial projects. The government has named a committee to investigate criticisms of some activities of the Development Board.

Costs in Iraq are on the brighter side. Cost of steel products and lumber are lower. Prices of other materials remain steady, and wage rates have not jumped since last year.

• **Lebanon—Outlook for future construction volume is uncertain.** Beirut's apartment and hotel building boom is ending. Prospects for further investment from abroad grow dim. But despite the boom, materials prices are down, except sand and gravel. Skilled labor wage rates are steady.

• **Israel—A building boom is in progress.** Housing is helping support volume, while development at the Port of Elath will continue for years. With the exception of cement, supplies present no problem. Prices generally are stable. Wages are up slightly from last year.

• **Turkey—Construction is hampered by severe inflation and lack of foreign exchange.** The government is trying to advance large numbers of ambitious projects. Materials prices are soaring; steel products are 200% higher than a year ago. Other prices have zoomed. Wages also are higher than a year ago.

• **Morocco—Here French inflation hits the construction industry.** Steel prices are down, but other materials prices are up sharply.

2. Latin America and Hawaii

Recession and inflation are striking at construction activity. Price drops in world markets vitally affect most Latin countries' exports and income. Many construction projects stagnate as a result. However, total construction volume this year will still top last year by nearly $4 billion. There will be shifts in activity to government power plants, railroads, airports, housing, port works, and irrigation.

• **Argentina—Private building is climbing.** The government is planning many public works projects, perhaps too many. Severe inflation in the past year has shoved building costs up 41.9% from May 1957 to May 1958. Adding to the problems is the construction industry's use of obsolete equipment. Materials are in good supply, but prices are much higher.

• **Venezuela—New government and general uncertainty have brought a sharp decline in construction activity.** Many projects scheduled by the former administration have been canceled or completion schedules extended.

The current regime is shifting to more public-type projects and turning from luxury apartment buildings. Private urban housing activity collapsed when the new government took over, but now is expected to show strength slowly. Supplies are plentiful, but there is a shortage of skilled labor.

• **Peru—Construction industry has one watchword—"caution."** The drop in world metal prices leaves the government without adequate foreign exchange. The entire economy suffers. Both public and private construction are severely effected. Costs are not higher, despite sharp boosts in materials prices, because contractors are chopping profit margins. Supply of both materials and labor is good.

• **Colombia—This area's biggest construction boom just ended.** Inventories of imported materials and equipment are growing fast. Buying has stopped. A sharp downturn is expected this year, but costs are going up fast.

• **Mexico—The outgoing administration is pushing completion of many projects. Public works are expected to increase over the next six years.** Appropriations for communications and public works already top last year by $19 million. There is a strong trend to urban work. Housing, both public and private, is expected to jump greatly this year. Prices of materials are either stable or lower. Construction wages are fixed. Steel is in short supply. Other materials and labor are abundant.

• **Puerto Rico—A record construction boom is in progress.** A new minimum wage law will boost labor costs, but other prices show a down trend.

• **Hawaii—Construction will reach an all-time high this year and there is no end in sight.** Annual volume is close to $200 million. Big problem is the shortage of labor, but materials are no problem. Most materials prices and wages are higher than last year.

3. Europe

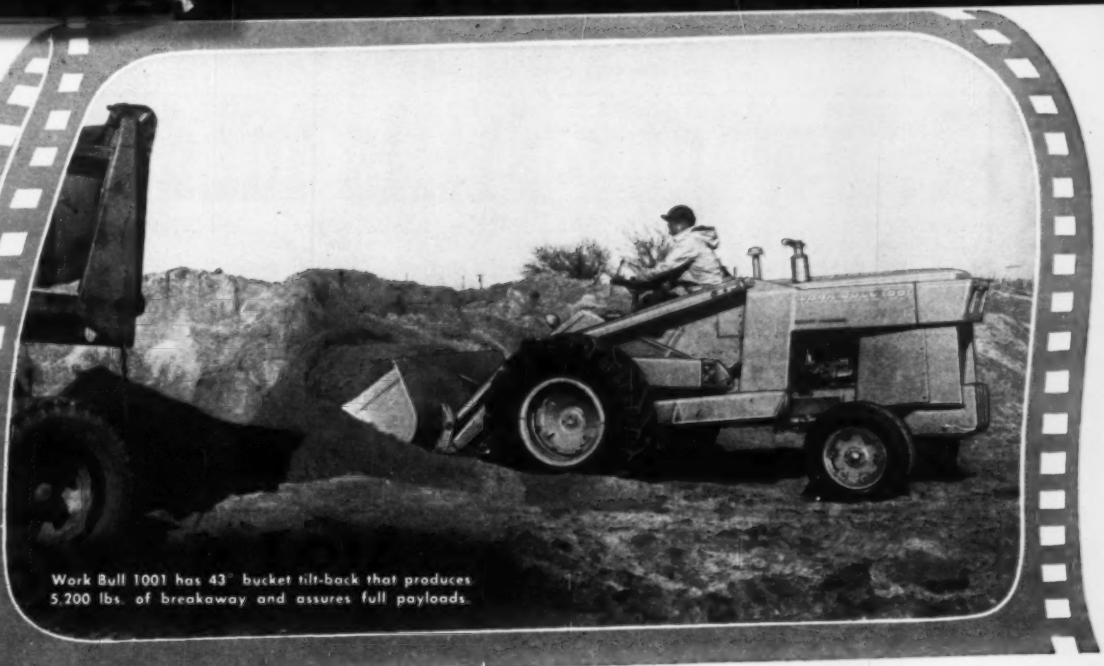
Foreign exchange shortages and a drop in exports to the U. S., because of the recession, have struck hard at construction in Europe. In most countries, volume is below last year. Germany is barely equaling last year. Price trends are mixed and unemployment is higher in all but France.

• **Holland—Recession and heavy cuts in government spending pulled construction volume lower in the first half.** Materials are in extremely good supply and prices are down. A nationwide collective labor agreement boosted wages 10% to 20%, and unemployment is climbing.

• **Germany—Construction is roughly on a par with last year and volume may total about $6 billion this year.** Housing costs are up 5.8% from last year. Labor is in fairly short supply, but materials are plentiful. Steel product prices are up and other materials prices are steady. Labor rates are higher.

• **England—British contractors have been hurting.** A tight money policy and a high tax structure chopped construction in the first quarter of this year. Public works accounted for about $490 million of the total first quarter volume of $1.1 billion. But now the picture is improving with more work from abroad available. Also, the government is giving a new tax break: a 5% to 30% increase in tax write-off allowances on new plant and equipment. Materials

(Continued on page 109)



Work Bull 1001 has 43° bucket tilt-back that produces 5,200 lbs. of breakaway and assures full payloads.

Stretch Dollars . . . Save Manpower with equipment that does more!

WORK BULL POWER PACKAGES

LET YOU MATCH MACHINE TO JOB, AND STILL GET MULTIPLE DUTY EVERY DAY!

Now, you can choose the power best for your operations, then match it with attachments that are virtually custom-made for industrial use!

Work Bull 1001 Multi-Purpose Tractor-Loader is convertible into 8 different machines . . . from a Loader to a Pick-up Sweeper, Backhoe (with its own backfill blade), Fork Lift, Angle Dozer, Crane, Rotary Broom, and back to a Loader with Scarifier attachments. It has 60.3-h. p. engine and features instant-reversing for fast time-cycle operations.

Work Bull 202 Utility Tractor is a husky cost-cutter whose high-torque, 40-h. p. engine produces more power at low speeds than any other tractor in the utility class! Davis Loader-Backhoe attaches directly to the tractor, so the rig performs as one integrated unit. Loader attachments include Fork Lift, Angle Dozer, Crane, Scarifier, and a variety of Loader Buckets. Among its rear end and side attachments are the Auburn Trencher, Scarifier-Scraper, Multi-Purpose Blade, Soil Scoop, Pipe and Cable Layer, Cordwood Saw, Tipping Trailer, Post Hole Digger, and Side-Mounted Mower.

Work Bull 303 Medium-Range Tractor and 500 Loader is the rig you need for tough jobs demanding more power, weight, and reserve stamina. Speed and economy make it suitable for utility use, too. Has instant-reverse, power steering, 54.5-h. p. engine, and a wide range of quick-change attachments.

Work Bull Fork Lift has Materials Bucket, Block Forks, Side Shift, Log Hook, Bale Clamp, standard 48″ Tines, Load Clamp, 20′ Mast Extension, and Angle Dozer. This unsurpassed versatility . . . plus 4,000 pounds capacity, high flotation, power steering, and turning brakes . . . make it the most useful yard handling rig available . . . both, on and off hard surfaces!

Work Bull 202 and Davis Loader-Backhoe are integrated for maximum on-the-job efficiency.

Work Bull 303 with power-matched 500 Loader is a multi-purpose rig for heavier jobs.

Work Bull Fork Lift has ten power-matched attachments for handling all types of material.

For information on the complete Massey-Ferguson Industrial Line ask for Brochure G-4. Write *Massey-Ferguson Industrial Division, 1009 South West Street, Wichita 13N, Kansas.*

MASSEY-FERGUSON INDUSTRIAL DIVISION

1935...wagon drills made hole drilling easy

The CP Tracdril thrives on hard work on tough terrain. The Tracdril tows its own compressor up steep grades . . . spots easily into position without "bull work." Hydraulic controls elevate the U-arm . . . set drill carriage angle . . . operate sliding cone for faster tramming and drilling. Takes on top-holes or toe-holes with equal ease. Two heavy-duty deep-hole drills now available: CP-400 DR, 4″ cylinder bore, 2½″ holes to 50 feet; and CP-450 DR, 4½″ cylinder bore, 3″ holes to 75 feet.

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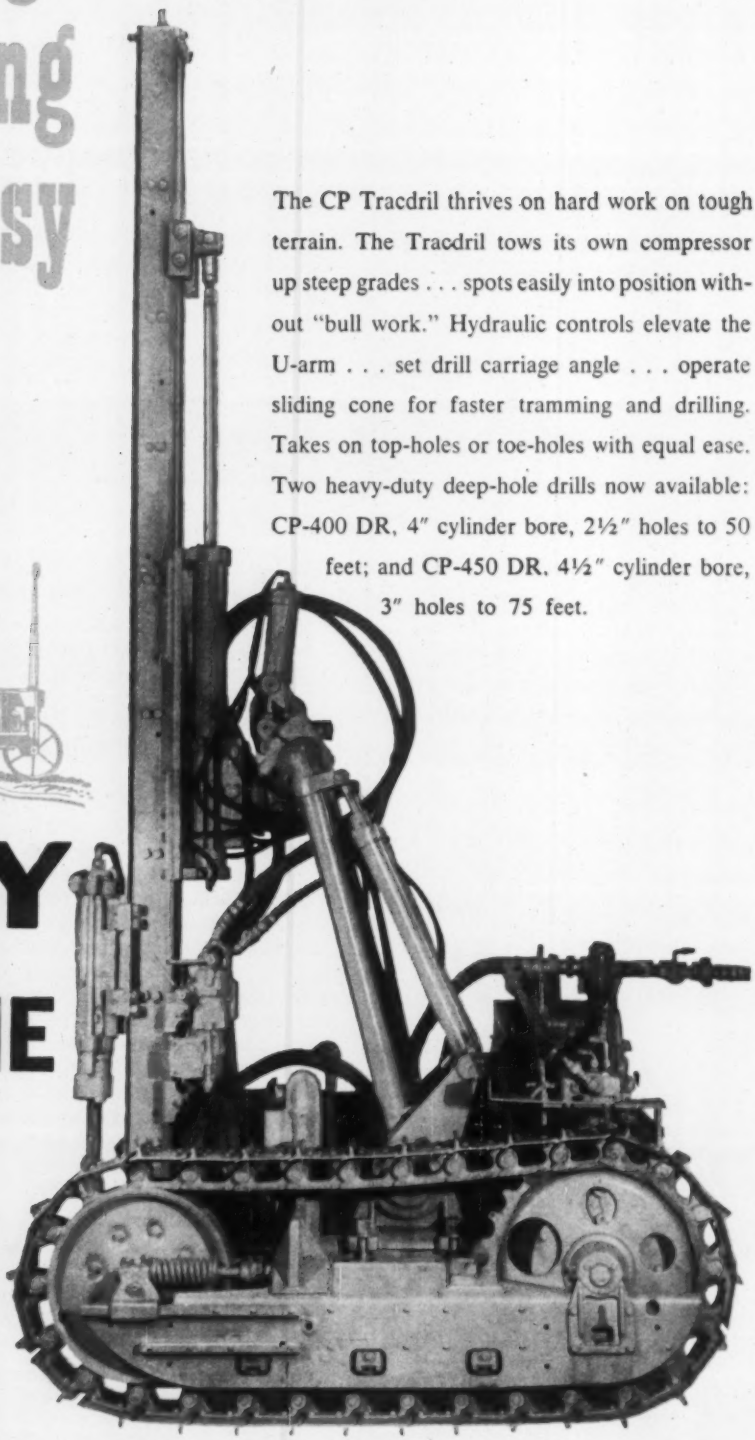

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are no problem, and unemployment is higher than a year ago. Price trends are mixed, but an upward movement is anticipated.

• **Spain—Construction volume is down sharply, mostly in housing.** Prices are generally higher, with steel products showing the greatest price jump.

• **France—Construction activity tops last year slightly, but government moves to strengthen the franc have cut into new project plans.** Costs are sharply higher. Labor is in short supply, due mostly to the Algerian war and the difficulty of importing labor.

• **Italy—Materials prices are dropping.** However, labor rates are much higher than last year. Over-all construction costs leaped 33% because of the higher wage rates.

4. Far East and Australia

A general downturn in construction has hit these areas, although there are some mixed trends. In several countries, activity is below 1957. In others, construction is sustained only by massive government action. Prices of building materials are down and many countries show an advance in wage rates over a year ago.

• **India—A serious shortage of foreign exchange has hit hard at private office and residential building.** Heavy construction is sustained by government-financed projects.

• **Ceylon—Public construction is at a high level, and private projects are strongly supported by state loans.** Building materials prices are down from 1957, but serious unrest in labor has pushed wages above levels of a year ago.

• **Pakistan—Prices of most materials are rising slowly and now are slightly above year-ago levels.** Portland cement prices lead in this respect, reflecting drastic shortages. Reinforcing bars are the only exception to the general rise in prices. Wage rates are unchanged.

• **Japan—All construction activity is less than last year.** Heavy construction volume may be 10% to 20% below 1957. Since the peak of a construction boom in August 1957 because of tight control on foreign exchange reserves, materials prices and building costs are substantially lower. Costs of reinforced concrete structures are 20% below a year ago, reinforced concrete plus steel structures are 24% below a year ago and the total average cost is 7.5% less than last year. That includes wood structures. Wages are steady.

• **Australia—Building costs are down slightly from last year.** Costs of residential structures are 12.5% lower. Tight money restricted construction activity during the past year, leading to some unemployment. Apartment construction is increasing, much of the activity backed by U.S. investors. Supplies of building materials are abundant. Prices are down, except steel shapes and reinforcing bars. Construction wages are up slightly, and skilled labor is in short supply.

Business Is Proving Promised Upturn

New signs of economic recovery are being posted daily, confirming the trend promised in recent months by ENR contract awards and new orders for construction machinery. The upward climb is marked by:

• **A rise in gross national product,** the nation's total of goods and services produced. It has turned up after touching bottom in the first quarter of this year.

• **Sales of some major construction equipment** companies are continuing a sprint started in the second quarter.

• **Some industrial building projects have been resumed.** They were deferred early in the year because of the recession and, at the time, a cloudy future.

• **Steel companies' production rates have been edging upward.** July was below June's rate. But it surprised the producers, who had anticipated one of the worst months of the year.

• **Picture detailed**—GNP hit bottom at an annual rate of $425.8 billion during the first quarter. For the April-June period, preliminary estimates by the President's Council of Economic Advisers place the rate at $428 billion.

The bounce came in three areas: national security spending, governmental purchases (federal, state and local) and personal spending.

Caterpillar Tractor Co. also is showing how the economic winds are blowing. The firm announced it will rehire 1,000 workers at three of its Midwest plants during August. More substantial recalls are anticipated after August, the company says.

Caterpillar reports that sales for June were $4.1 million ahead of the same month last year. Sales this June were $66.9 million. Results for the full second quarter trail last year's, but sales volume continues to rise.

The pace also has stepped up at Clark Equipment Co. President George Spatta reports the Benton Harbor, Mich., plant is now working a three-shift day. Sales to the construction industry through June total about $20 million he says. Sales in the second quarter were 30% ahead of those in the first quarter.

Gardner-Denver Co. also made a good June showing: 23% better than May. President G. V. Leece says orders "continue to increase, particularly for construction equipment."

• **Widening effect**—The stronger housing market is being felt in other areas of the economy. General Electric will rehire 300 workers in its household refrigerator department at Louisville, Ky., and steel producers whose heavy market is construction are confident.

Inland Steel's second quarter sales of $159 million topped the first quarter by 6.6%, although the pace is behind that of last year.

Joseph L. Block, president of Inland, predicts third quarter output will equal 75.5% of capacity. "We believe the fourth quarter will show some increase from current levels," he adds.

Jones & Laughlin Steel Corp.'s second quarter sales of $156.2 million were 12.5% above the first quarter.

Another of the metals group is feeling the upturn. Kaiser Aluminum and Chemical recalled 240 workers to its Chalmette, La., plant. This will return it to full production. The company also is recalling 150 workers to its Mead, Wash., plant.

Structural steel fabricators experienced their seventh consecutive new-orders increase in June. American Institute of Steel Construction reports orders amounted to 286,798 tons, compared to 224,308 tons in May. Moreover, the June figure topped June 1957 by 16%, the first increase over a 1957 month so far this year. However, the six-month total of 1.3 million tons is 34% under the same period last year.

• **Industrial confidence**—Some companies are showing a marked change in outlook. General Electric ordered resumption of work on a $5 million research and administration building in Cleveland. In addition, the company says it will resume work on another $7.5 million of expansion in Ohio.

Union Carbide is pushing ahead again with construction of a $14 million technical laboratory at Eastview, N. Y. The job was halted in February after foundation work had started.

(B&F continued on page 110)

July Contract Awards Set Record

Total of $2.5 billion boosts seven-month volume 6% ahead of last year, public works the leader

Construction contract awards in July were the second best on record for any month. The weekly average rate of $496 million was outstripped only by the $604 million peak of December 1950, when the Savannah River atomic power plant was awarded. The July figure also set a record for that month.

Public and private contracts last month topped the June weekly award rate and the year-ago rate. Awards poured in so fast that the seven-month total now exceeds $12.1 billion. This is 6% more than a year ago on a weekly average basis. Only the record year of 1956, when $13.2 billion was awarded, beats 1958's new business.

• **The public sector**—Public housing scored the biggest gains over both June and year-ago levels, 83% and 277% respectively. The contract total was $276 million. Public housing was 102% ahead of 1957 during the first seven months.

Highway and bridge contracts also rose. The total was $523 million in July, 5% over the June volume—the previous record—and 11% ahead of July 1957. The seven-month total of $2.36 billion, topped 1957's same period when a record was established. The pickup came mostly in the second quarter.

Highway awards alone accounted for $1.94 billion of the $2.36 billion. This category was 1% ahead of last year's first seven months, and again the rally came in the second quarter. Bridge awards through July totaled $416 million. Though 7% behind the 1957 mark, bridge awards have stepped up since March, when they were 41% behind.

• **The private sector**—Mass housing was the star performer in July. Contracts totaled $487 million, 25% above June and 71% above July 1957. The seven-month total of $2.4 billion was 30% ahead of last year. Except for commercial, all other private categories were below June levels. Commercial work was off 17% from July 1957, but it was 9% ahead of last year for the first seven months.

• **By regions**—Only in the Middle West was the seven-month award total below last year's. In New England, public and private awards doubled last year's volume.

In July, private contracts let on the West Coast were nearly five times year-ago totals. Mass housing activity there soared. Public construction more than doubled the July 1957, volume.

West of the Mississippi, July contracts totaled more than $500 million, 40% ahead of last July. In the Middle Atlantic region, roads, commercial, and industrial building were behind year-ago levels, other items were ahead. Southern contractors added nearly twice as much new business in July as a year ago.

ENR Cost Indexes Continue to Rise

Construction and building costs moved up slightly to new highs as measured by ENR's 20-cities Construction Cost and Building Cost Indexes. The rate of increase slowed sharply in August, but structural steel price hikes and lumber price advances probably will push costs up further this month. But wage increases will be fewer because most contract negotiations are completed.

The August Construction Cost Index is a record 764.44, up 0.3% over July and 3.5% above August 1957. The Building Cost Index moves up to a new high of 525.62, also 0.3% over July and 1.7% higher than a year ago.

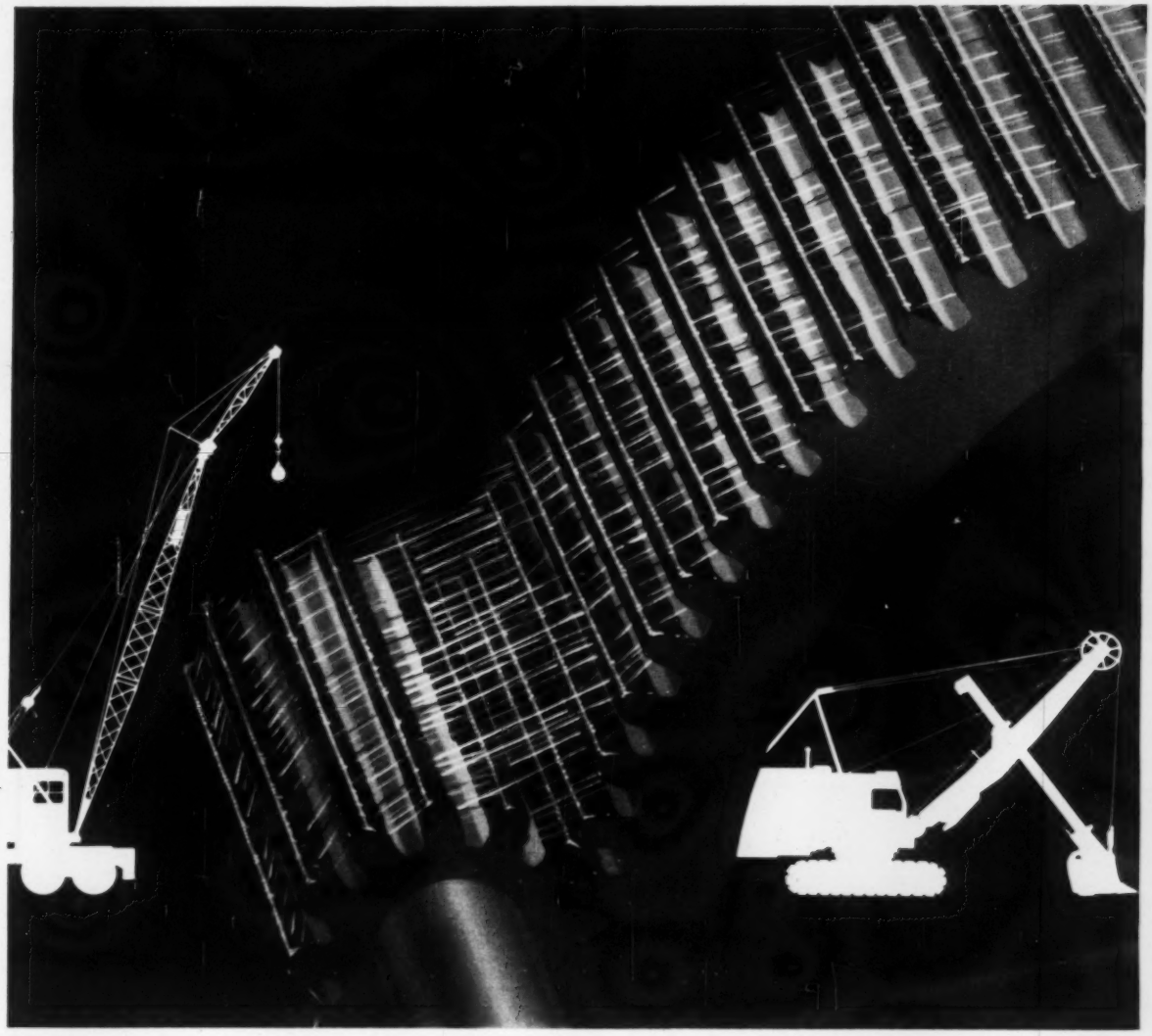
Prices of construction steel will rise shortly. Nearly all steel firms raised prices of sheet and strip last week, but only one firm—Republic Steel—announced hikes in construction items. However, A. B. Homer, president of Bethlehem Steel, says he expects increases to come "soon" on structurals, bars and plates.

Engineering Construction Contracts—July '58

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Five Weeks—Thousands of Dollars (000 Omitted)

	July, 1958							U. S. Cumulative Seven Months		% Change	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1958 (31 Weeks)	1957 (30 Weeks)	'57 to '58 Av. Wk.	July 1958
Public Works											
Waterworks	1,496	9,753	2,749	16,044	3,936	7,904	**41,882**	**199,162**	216,903	−11	4,871
Sewerage	2,887	13,176	7,099	7,106	10,839	17,693	**58,800**	**363,445**	334,455	+ 5	7,415
Bridges	2,230	28,710	19,966	33,459	25,428	10,575	**120,368**	**416,415**	432,347	− 7	11,655
Earthwork and waterways	1,469	22,413	23,224	437	44,758	29,842	**122,143**	**726,447**	665,589	+ 6	4,022
Streets and roads	29,519	43,650	75,700	55,784	121,777	76,489	**402,919**	**1,944,403**	1,832,583	+ 3	18,240
Public buildings, residential	10,804	75,646	55,743	19,871	63,259	50,853	**276,176**	**861,706**	412,639	+102	14,272
Other public buildings	26,189	66,806	34,244	59,309	79,012	75,439	**340,999**	**1,643,150**	1,339,689	+19	11,888
Unclassified	31,158	35,923	41,601	43,974	72,562	71,583	**296,801**	**961,191**	750,624	+24	11,156
Total Public	**105,752**	**296,077**	**260,326**	**235,984**	**421,571**	**340,378**	**1,660,088**	**7,115,919**	**5,984,829**	**+15**	**83,519**
Federal government (included in above classifications)	36,180	72,247	116,588	47,497	203,676	152,394	**628,582**	**2,085,910**	1,656,335	+22	25,118
Private											
Bridges				73			**73**	**8,509**	1,777	+366	
Industrial buildings	36,546	11,835	23,101	38,994	13,376	17,946	**141,798**	**1,128,819**	1,945,900	−44	8,455
Mass Housing	46,872	102,690	29,541	77,528	41,554	188,628	**486,813**	**2,408,439**	1,790,006	+30	15,432
Commercial buildings	16,943	34,076	13,694	40,775	26,810	30,812	**163,110**	**1,173,916**	1,040,761	+ 9	20,440
Unclassified	788	15,753	4,227	532	8,372	200	**29,872**	**274,316**	271,344	− 2	721
Total private	**101,149**	**164,354**	**70,563**	**157,902**	**90,112**	**237,586**	**821,666**	**4,993,999**	**5,049,788**	**− 4**	**45,048**
Total Engineering Construction:											
July, 1958—5 weeks	**206,901**	**460,431**	**330,889**	**393,886**	**511,683**	**577,964**	**2,481,754**				**128,567**
June, 1958—4 weeks	118,063	457,284	272,653	318,690	391,754	341,445	**1,899,889**				138,966
July, 1957—4 weeks	96,392	371,893	138,757	484,854	292,340	204,837	**1,589,073**				119,809
Seven Months—1958	**819,761**	**3,163,159**	**1,532,357**	**2,146,702**	**2,423,733**	**2,024,206**		**12,109,918**		**+ 6**	**962,618**
Seven Months—1957	719,209	2,683,468	1,206,447	2,530,739	2,026,167	1,868,587			11,034,617		989,868
% Change '57 to '58 Av. Wk.	+10	+14	+23	−15	+16	+8					−6



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Surett N is a radically new, super-long-life gear shield and wire rope lubricant. Thanks to a new formulation, it gives protection to exposed machinery never before attained by conventional gear shields. Exceptional tackiness and adhesive qualities make Surett N cling to metal. Rotation of gears lubricated with Surett N creates a dense web of grease strings stretching across tooth surfaces. Result? Any grease displaced by pressure is immediately replaced by Surett N's unique redistribution action.

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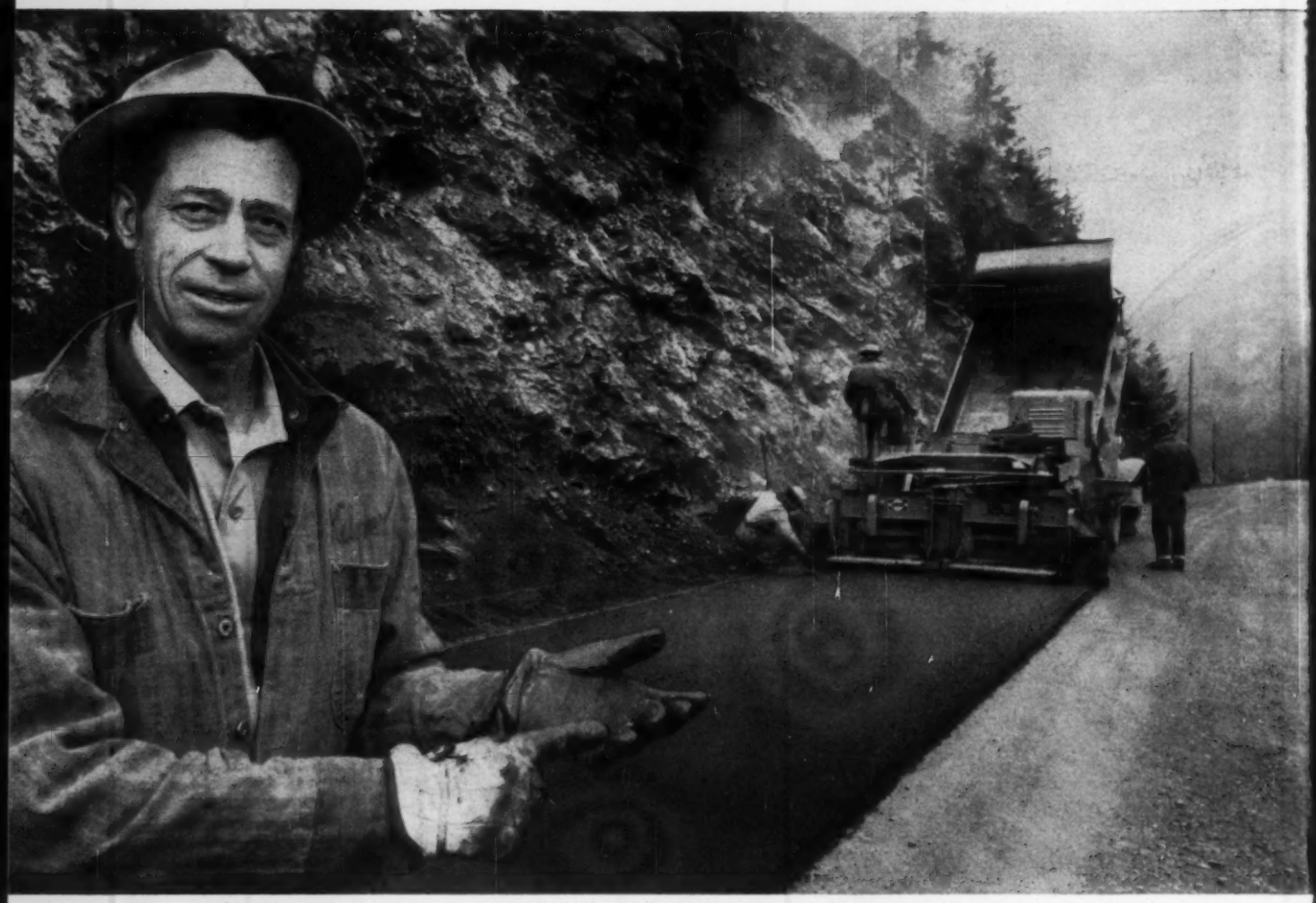

Mr. Randall Kilmer uses the Blaw-Knox Black Top Paver on the Elwha River Road west of Port Angeles. He values the locking differential that keeps the Black Top Paver going under all kinds of traction conditions.

"A REMARKABLE PAVER"

"It's maneuverability has already saved us the cost of an additional machine for dual lane paving. We've used the Blaw-Knox Black Top Paver just about everywhere—parking lots—widening and relocating—section repairing. Transportation costs for an ordinary paver would have made it unprofitable for us to bid jobs like these," reports Randall Kilmer, owner of the Kilmer Construction Company, Port Angeles, Washington.

"We have been able to bid on a wider variety of work and the quality of the mat layed by this machine is first and foremost with us. A State Highway Department Engineer rates it as one of the best he's ever seen," Mr. Kilmer reports.

Downtime on Mr. Kilmer's Blaw-Knox Black Top Paver has been limited to one on-the-spot fifteen minute repair job in a year. Routine greasing takes approximately thirty minutes per day.

Profitable, trouble-free performance like this has made the Blaw-Knox Black Top Paver a real money maker for contractors all over America. Why not get the full story from your Blaw-Knox distributor —you'll be surprised at how quickly you'll start earning additional profits.

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Labor Board: "You Handle It"

NLRB upholds voluntary settlement of jurisdictional disputes, even when employer is coerced by the union

The National Labor Relations Board strengthened the process of voluntary settlement of jurisdictional disputes last month. But some contractors may feel that in doing so it stretched the ordinary concept of "voluntary" and limited the usual freedom of private contract.

What the new ruling says, in effect, is this: A contractor is legally bound to use the voluntary procedure if he consents to do so. Even if his consent is obtained under duress, he is still bound. And he can't contract away that obligation in a private contract, such as a labor agreement.

The dispute arose in Detroit between millwrights (part of the carpenters union) and riggers (members of the iron workers union). Both claimed the right to dismantle and relocate machinery on a rehabilitation project. The work was assigned to the riggers by the contractor, Don Cartage Co., which had a labor contract with the riggers.

In an effort to get the work, the millwrights picketed the project. All the trades, except the riggers, stopped work. Cartage finally yielded to a carpenters demand that it agree to a 1957 rigger-millwright settlement procedure worked out by John Dunlop, then chairman of the construction industry's National Joint Board for the Settlement of Jurisdictional Disputes.

This meant that millwrights got the work assignments they wanted, the picketing stopped and work resumed.

During the picketing, Cartage applied to the NLRB for help. It claimed the picketing was an unfair labor practice because the union was trying to get a work assignment away from the riggers. It had never become a party to the Joint Board procedure and the dispute never went to that board.

But the NLRB refused to hear the dispute. It said it couldn't—but not because the contractor didn't have a legitimate complaint. The reason was that Cartage had agreed to a voluntary procedure (Dunlop's) and must abide by it.

"The fact that the company agreed upon this method of voluntary adjustment of the dispute in the midst of picket line activity," the board observed, "does not detract from the force of the agreement insofar as the board's power to determine the dispute is concerned."

What does this mean? It means that contractors should enter into agreements for the voluntary settlement of disputes with their eyes open. For the law gives them two choices—a voluntary private adjustment or settlement of the dispute by the NLRB. The first precludes the second and the labor board won't concern itself with the reasons for the contractor's choice.

Nor will it let him renege on the voluntary agreement because it may conflict with his labor contract. Such contracts by implication are subject to the law's provisions on "agreed upon methods for voluntary settlement" of jurisdictional disputes.

The fact that the two unions disagreed over who should get the work under the Dunlop decision, the board said, doesn't give it the power to hear the dispute. Nor could it, the board added, even if the riggers refused to comply with the voluntary settlement.

Net result is that NLRB has taken another step forward in its attempt to let the construction industry solve its own jurisdictional problems.

The law is designed, the labor board says, "to afford the parties an opportunity to settle jurisdictional disputes among themselves without government intervention whenever possible." It is this approach that has given life and meaning to the National Joint Board.

As the law now stands, the NLRB won't hear and determine a dispute if the parties have agreed to some form of voluntary settlement procedure. If that procedure proves ineffective, it still won't settle the dispute on its merits. But it does retain its power to issue an unfair labor practice complaint, to seek an injunction and to issue a cease and desist order.

Training Pushed by Plumbers

The plumbers union, which already has accumulated a national training fund in excess of $1.5 million, celebrates the fifth anniversary of a unique and high-powered training program next week at Purdue University.

Over 400 teachers from vocational and union schools throughout the country will begin a week of training in educational methods at Purdue on August 11. The national contests for plumber and steamfitter apprentices will be held at the same time.

What has this program accomplished? Three things. It's put the spotlight on the need for highly trained and competent instructors. It's improved the training of apprentices and the retraining of journeymen and equipped them with the most modern of mechanical skills. It's allowed the union to meet a large part of the skilled manpower needs on atomic projects, oil refineries and chemical installations; it also promises to reduce the present need to recruit such workers from distant parts of the country.

Perhaps the most unusual aspect of the program is the union's emphasis on well qualified instructors. The United Association is the only union that has a teacher-training program.

Employers, of course, have played a significant role. They've helped finance the training program; they serve on the joint apprenticeship committees; and they help administer the national training fund, which was set up under an agreement with the National Constructors Association.

(Under that agreement, NCA contractors contribute 2½ cents an hour to the national fund for each hour worked by journeymen and apprentice plumbers and steamfitters. The fund will be used to help finance local training for both journeymen and apprentices.)

The session at Purdue has become an annual highlight of training programs conducted throughout the year at the local level. Year-round courses include such advanced work as heli-arc welding, triginometry and thermodynamics.

Says union President Peter T. Schoemann: "It costs our international union and its locals a sizable sum each year to conduct this educational program but we consider it a wise investment—an investment that will pay rich dividends in the future of our organization, to our forward-looking members, to cooperating employers and to our nation as a whole."

(*Labor continued on page 114*)

Business Groups Are Criticized

Senator Kennedy accuses them of killing labor reform bill; Secretary Mitchell calls objections unwarranted

U.S. Labor Secretary James P. Mitchell and Sen. John F. Kennedy (D.-Mass.) last week severely criticized organized business for what appeared to be the almost certain death of the controversial Kennedy-Ives labor reform bill.

The bill was referred to the slow-moving House Education and Labor Committee by House Speaker Sam Rayburn (D.-Texas) who, for political reasons, had held it on his desk for 40 days. There's little likelihood it will be revived.

Meanwhile, however, the House Labor Committee's version of the welfare and pension fund disclosure bill—the only other significant piece of pending labor legislation—was cleared for floor action by the Rules Committee. It will probably be debated this week. But efforts to exempt employer-administered funds and give the Secretary of Labor more control over disclosure procedures may well mark the end of its already faltering progress.

• **Exaggeration**—The outspoken attack by Senator Kennedy was aimed at such business groups as the National Association of Manufacturers and the U.S. Chamber of Commerce. He accused them of "intemperate, exaggerated and misleading attacks creating enough confusion and consternation to insure the bill's delay and thus demise at this late date."

Secretary Mitchell's strongest blast was against early Democratic "surrender" in the fight for labor legislation. He also called business opposition to the bill "in large measure unwarranted."

• **Objections**—Crux of the problem is that the bill falls far short of what many employers would like to see. It neither intends—nor pretends—to effect a general overhaul of labor law. It contains no remedial legislation on such basic issues as union monopoly, secondary boycotts or organizational picketing.

Except for several Taft-Hartley Act amendments, it's limited to the protection of the union financial interests and democratic rights of union members. This is achieved by various curbs on union officers and employers—curbs which some employers feel are weighted in favor of labor. (The principal amendments relate to construction prehire contracts, apprenticeship contributions, voting rights of economic strikers, non-Communist affidavits from employers and the no-man's land in labor law jurisdiction.)

The NAM calls the bill "woefully inadequate," "bad legislation," and "illusory." It says it weakens the Taft-Hartley Act and opens the door to greater union abuses. Some other employer groups share this view. And some engineers are fearful it would strip them of their right to separate representation.

Mr. Mitchell, however, would have the merits of the bill assessed within the limited framework of what it seeks to accomplish. Last week, he challenged anyone to "say that this legislation has not received adequate study." He said Congress can still "pass the legislation which the people of this country feel is so necessary," if it is "truly concerned" with the problem.

What will the House Labor Committee do? Probably nothing. Said chairman Graham Barden (D.-N.C.), who has scheduled no hearings on the bill: "We have to be practical. The sun is going down on this session."

A New Safety Guide

AGC revises its manual in drive to curb accidents

The Associated General Contractors of America, Inc., warns construction men that accident prevention doesn't occur by itself.

"Only through a concerted effort can the construction industry reduce its rate of accidents," says the association. It cites education, vigilance and cooperation as essential to safety and singles out superintendents and foremen as key figures in the success of any accident prevention program.

The AGC warning is contained in the fifth revised edition of its "Manual of Accident Prevention in Construction," just published in loose-leaf form.

Dedicated to superintendents and foremen of the construction industry, the new edition was necessary because of "developments in the past six years which have had a major effect on construction technology".

The sections on explosives, concrete construction, scaffolding, power tools, marine equipment and highway construction have been updated and enlarged, and a section on powder actuated tools has been added. The section on "Safe Practices" has been more than doubled in size.

In announcing the revision, AGC Executive Director James D. Marshall said: "This manual is the result of studies and recommendations from experts in each field of construction. I recommend it highly to contractors as a means of reducing suffering and hardships caused by accidents and thereby building employee morale, increasing efficiency, lowering construction costs, and avoiding unnecessary governmental regulation".

Earlier editions of the manual have been widely used by contractors, federal contracting agencies, the National Safety Council and the American Standards Association, which approved the 1952 edition.

The new edition is available from AGC, 20th and E Sts., N.W., Washington 6, D. C. Copies are $3.25, plus postage.

Relief Was Slow

It took six weeks to end road project picketing

Union organizational efforts and the supremacy of federal labor law have combined to give a Kentucky highway contractor a heap of labor trouble.

It all started when contractor Tye & Wells moved onto an Owensboro-Whiteville road project with workers represented by United Construction Workers. UCW is a division of District 50, which is part of John L. Lewis' United Mine Workers.

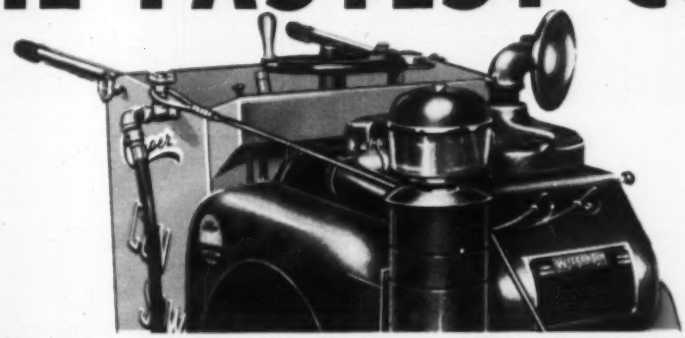
Construction unions in the AFL-CIO have long been jealous of UCW. Both groups compete for the same work. Soon the project was picketed by locals of the operating engineers, carpenters, laborers and teamsters.

The contractor tried to get an injunction against the picketing—unfortunately in a state court. Twice the request was turned down on the grounds that the National Labor Relations Board has exclusive jurisdiction over the dispute under federal labor law.

Meanwhile, the contractor filed an unfair labor practice charge against the picketing unions with the NLRB. The contractor claimed the unions were trying to force cancellation of his labor contract with UCW and get the work assigned to their members instead.

(The four locals are affiliates of the international unions that formed a mutual aid pact to promote their

THE FASTEST CUTTING



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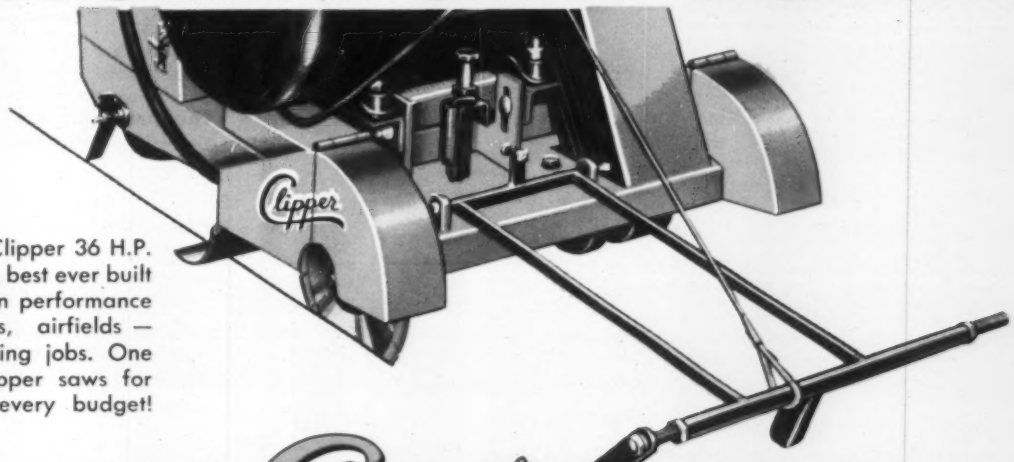

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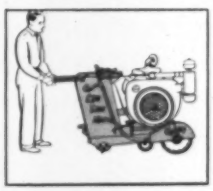
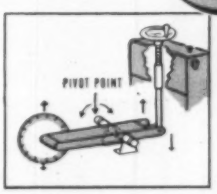
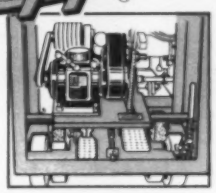
AND HERE'S HOW Clipper "SAWS RIGHT THRU" BUILDS THEM . . .



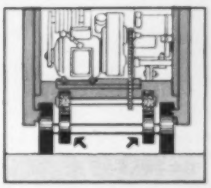
Our engineering staff really outdid themselves with Dual Balance Design—which simply means that this Big Saw is so perfectly balanced that one man can easily handle it. The engine weight is over the blade, preventing blade "ride-out". It's easier to use than any other saw—another reason why 4 out of 5 Buy Clipper!



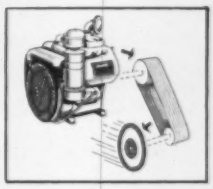
Only the most accurate blade feed was good enough for us, so we originated Ball Bearing Positive Screw Feed . . . which gives you positive control of the blade at all times . . . and enables you to keep abrasive blades at the proper cutting depth as they diminish in diameter. No other method . . . not even hydraulic . . . gives such complete blade protection.



We bring you the most powerful Heavy Duty Transmission ever used on a concrete saw. To it we've added abrasive coated drive wheels (ours only) which transmit smooth continuous power and propels this rugged saw through the toughest jobs at speeds up to 26 feet per minute. Another reason why it's the fastest saw ever built!



Solved! The problem of curing compound buildup on the drive wheels. We added two Separate Contact Wheels which never touch the pavement and operate right off the transmission drive wheels. Result? Continuous operation without downtime for wheel clean-up. A good example of our experienced know-how, which means more practical, efficient equipment for you.



Selection of component parts gets the same intelligent thought given the design of Clipper Saws. That's why we chose the dependable proven 36 H.P. Wisconsin Engine, then added 6 reinforced V-Belts to give 100% sure power delivery. That's why we can guarantee that no other saw can match Clipper!

ONLY CLIPPER CONCRETE SAWS ARE . . . Unconditionally Guaranteed TO CUT FASTER— HANDLE EASIER and GIVE MORE FOOTAGE PER BLADE THAN ANY OTHER SAW!

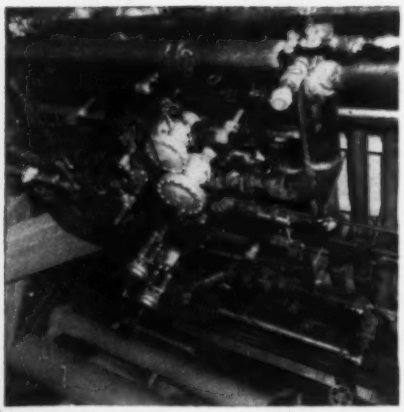
434X

THE CLIPPER MANUFACTURING CO. — 2812 Warwick — Kansas City 8, Missouri

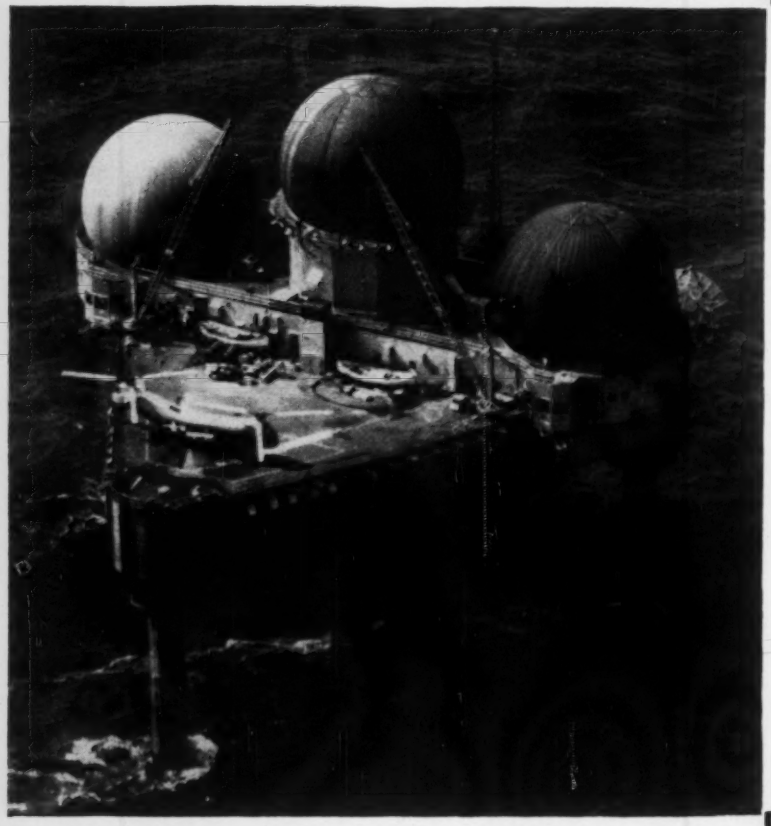
Sold direct from Clipper offices and warehouses coast to coast. • Call your Factory Trained Representative for Free Demonstration.

USS National Pipe

doing a job for National Defense aboard Texas Tower

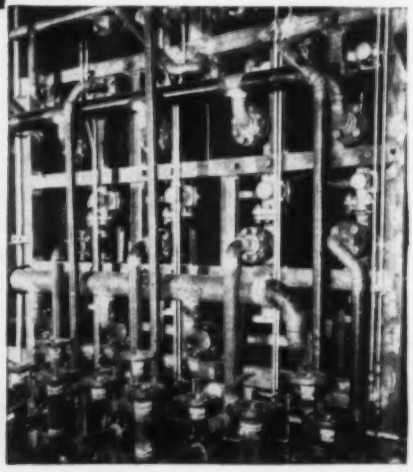


The main steam reducing station located on the bottom deck of the Texas Tower. All NATIONAL Pipe.



This man-made radar island stands on giant stilts 110 miles at sea off the North Atlantic coast. An important segment in our country's defense against surprise attack, the $13,000,000 Texas Tower is the first of five such "plane watcher" stations to be constructed. Approximately 9,084 feet of USS NATIONAL Pipe were used in the Texas Tower—for steam piping, chilled water piping, fuel oil piping, and compressed air.

Flooding and evacuating piping panel—controls instruments on the flooding and evacuating system used in lowering the template at sea.



Piping installed by Wallace Process Piping Company Inc., Norfolk, Va., as subcontractors to Steers-Morrison-Knudsen, Inc., New York City and Continental Copper and Steel Industries, Inc., New York City.

USS National Tube Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
United States Steel Export Company, New York

USS and National are registered trademarks

chances of obtaining more heavy and highway construction work. The alliance is known as the Four-Way Pact.)

The NLRB still has the Kentucky case and a federal court finally granted the injunction. During the six weeks it took to get relief, the project had come to a halt because material suppliers refused to cross the picket lines.

Social Security Proposal Means More Payroll Taxes

A measure approved by the House last week will increase social security taxes to a maximum of 4½% if it becomes law.

The bill is designed to improve the benefit structure of the law and to help overcome a deficit in the social security reserve. It would boost benefits by 7% (with a minimum increase of $3 a month), give additional assistance to disabled persons, and to retired workers with other income and increase federal aid to states for public assistance.

Under the bill, the first $4,800 of an employee's earnings would be subject to tax, instead of the present $4,200. On January 1, the tax rate—which won't go up for another year under the present law—would move from 2¼% to 2½%. The tax would then be increased periodically until it hits 4½% in January 1969.

Senate approval of the bill is considered likely. The House passed it by a vote of 375 to 2.

Equal Job Opportunities Are Assured for Negroes

A 7,000-member local of the laborers union in Detroit has agreed to keep its referral practices free from racial discrimination. The agreement was worked out by the local union and the Michigan Fair Employment Practices Commission.

Twenty-two Negroes had claimed the local union discriminated against them in job referrals by passing over them. They said their names had been at the top of the union's referral list.

Under the new agreement, the union is committed to refer members for work "on the basis of chronological registration for job placement without reference to race, color, religion, national origin or ancestry."

Announcement of the agreement marked the first major disclosure of results achieved by the commission in its handling of 550 cases since its formation three years ago.

Andrew S. McFarlane, local union president and business manager, said discrimination "is definitely not the policy of this local."

SR . . . the dc rectifier type welder with new completely sealed semimetallic rectifier, new transformer and new weld stabilized circuit. Result is easiest arc starting ever, maximum arc stability, sounder, denser welds; current that handles all electrodes in all positions! Four models, 200 to 600 amps.
SRH . . . the same revolutionary improvements that set the Gold Star SR above and beyond the performance standards ever before achieved by a dc rectifier type welder. Designed primarily for compactness, the SRH is only 30¼" high — is ideally suited for stacking or paralleling in minimum space. Three models, 200 to 400 amps.
The miller GOLD STAR ALL STAR LINE
300 . . . combination ac dc welder design comes of age with this new Miller model. Features: new magnetic amplifier circuit; improved wave form, new arc starting control; three electrically controlled current ranges for finest adjustment, instant changeover from ac to dc; built-in high frequency. An entirely fresh concept for inert gas and metallic welding. Four basic models with kits available to convert to seven different types of welders.
300-M . . . an ac welder for inert gas and metallic arc processes. Combines unequalled welding characteristics with Miller's unique electric control circuit which permits precise slow or fast start. Features: built-in high frequency, primary contactor and ½ KVA control transformer. Offered in three basic models of from 200 to 400 amperes with optional water and gas controls available.
Complete particulars on any of the above welders will be sent promptly.
miller ELECTRIC MANUFACTURING COMPANY, INC. Appleton, Wisconsin
Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal, P. Q.

GET MORE FOR YOUR MONEY WITH A WARREN-KNIGHT TRANSIT!

There are many big reasons why you get greater value per dollar with Warren-Knight Transits and Levels. These many exclusive features of design and construction result in unexcelled accuracy—time-saving, ease and convenience in handling—tremendously low maintenance cost—longer instrument life—and great time and money savings in use. All these plus a lower price and direct shipment from the factory assures you THE GREATEST VALUE FOR DOLLAR OF INVESTMENT.

See for yourself. Write for FREE Folder NR-88

OUR 50th YEAR

WARREN-KNIGHT
136 N. 12th St., Phila. 7, Pa.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: August 28, 1958.

Contract B. P. 58-66
Town of Riverhead, New York

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Public Building Law and Highway Law, sealed proposals will be received, until 10:30 A.M., D.S.T., August 28, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract B. P. 58-66 for
Beach Protection (Two Stone Groins)
at Wading River Beach, Town of
Riverhead, Suffolk County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, New York.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract B.P. 58-66 may be examined and obtained at the office of Mr. Milton E. Goul, 325 West Main Street, Babylon, L. I., New York.

The deposit for Plans and Proposal Forms for Contract B.P. 58-66 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract B.P. 58-66 is $65,000.00.

Proposals for Contract B.P. 58-66 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the State of New York, Commissioner of Taxation and Finance for the sum of $3,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Public Building Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: August 21, 1958.

Contract O and M 487

The Port of New York Authority
Columbia Street Pier
Brooklyn, N. Y.
Painting Interior of Shed

Sealed proposals for furnishing all labor, material and equipment for Painting Interior of Shed at the Columbia Street Pier, Brooklyn, New York, will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. (DST) Thursday, August 21, 1958, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administration Services, Room 900, and may be obtained upon request.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, August 7, 1958

Bids: August 14, 1958.

Benjamin Franklin Bridge
Contract No. 31-A-A

DELAWARE RIVER PORT AUTHORITY
of the
COMMONWEALTH OF PENNSYLVANIA
and the
STATE OF NEW JERSEY
Administration Building
Camden, New Jersey

Sealed bids will be received for the supply and erection of the Third Floor Annex to the Administration Building of the Benjamin Franklin Bridge, known as Contract No. 31-A-A, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Camden, New Jersey, until 2:30 P.M., Eastern Daylight Saving Time, Thursday, August 14, 1958, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon deposit of a $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $5,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the Work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the Contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
EXECUTIVE DIRECTOR

Bids: September 18, 1958

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

The Royal Irrigation Department of the Kingdom of Thailand requests sealed written bids for furnishing and delivering cif Bangkok Wharf for the Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents, including Invitation for Bids—No. YS-4-2, the following equipment:

2,100 metric tons of Steel Reinforcement Bars, sizes 3 to 11 inclusive, in lengths of approximately 12 meters.

Bids will be opened at 10:00 a. m., 18 September 1958. Copies of Contract Documents, including Invitation for Bids—No. YS-4-2, may be obtained by qualified Bidders, without cost, on written request on Bidder's letterhead, addressed to Royal Irrigation Department, Attention: Thai Liaison Engineer, c/o Engineering Consultants, Inc., 1940 West Mississippi Avenue, Denver 23, Colorado, U.S.A.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department

Bids: August 19, 1958.

Contract PN-530.003

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
DEMOLITION
TIDEWATER AREA

Sealed proposals for the demolition of buildings on the north side of the channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, August 19, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, August 7, 1958

Bids: August 26, 1958.

Contract NYA-670.002

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
ADDITION TO BUILDING NO. 196

Sealed proposals for the construction of an addition to Building No. 196 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, August 26, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, August 7, 1958

OFFICIAL PROPOSALS

Bids: August 28, 1958

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 28th day of August 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Greene (Rte. 385)	FARC 58-117	Catskill Athens, S.H. 5367 Project DF 365(7)	1.14	Asph. Conc. = 0.99 Mi. Misc. Work = 0.15 Mi.	$16,000 Plans $2	$300,000
Greene (Rte. 214)	FARC 58-101	Phoenicia Stoney Clove Pt. 2, FASSH 47-9 Phoenicia Stoney Clove Pt. 4, FASSH 50-12 Project DS 937(5)	4.47	Asphalt Concrete	$11,000 Plans $2	208,000
Warren (Rte. 28)	FARC 58-112	Warrensburgh Glen S.H. 8485 Glen Wevertown S.H. 1963 Project DF 757(3)	0.45	Asph. Conc. = 0.41 Mi. Misc. Work = 0.04 Mi. Plate Girder Br. 360'	$26,000 Plans $3	464,000
DISTRICT No. 3, Earle E. Towlson, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Onondaga (Rtes. 31 & 298)	FARC 58-56	Cicero South Bay, S.H. 452 Cicero Bridgeport, S.H. 9084 Syracuse Bridgeport, S.H. 1072 Project DF 1035(2)	7.85	Asph. Conc. Ty. 1A	$45,000 Plans $3	806,000
Onondaga (Rte. 298)	FARC 58-113	Syracuse Bridgeport, Pt. 1, New Court Rd. S.H. 672 A Project DF 994(6)	0.65	9" Cem. Conc. Pavt. = 0.63 Mi. Misc. Work = 0.02 Mi.	$18,000 Plans $2	324,000
Oswego (Rte. 11)	FARC 58-111	Syracuse Watertown, S.H. 278 Project DF 463(18)	2.38	Asph. Conc. Ty. 1A	$14,000 Plans $2	255,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston (Rte. 36)	FARC 58-109	County Line Dansville, S.H. 5398 Project DF 579(7)	1.51	Asph. Conc. = 1.49 Mi. Misc. Work = 0.02 Mi.	$10,000 Plans $2	173,000
Monroe & Orleans (Rtes. 18, 272, 33 & 31)	RC 58-114	Br. No. 4, S.H. 8322, Br. No. 2, S.H. 398, Br. No. 1, S.H. 83 Br. No. 1, S.H. 253		Clean. & Paint. 4 Brs.	$1,100 Plans $2	20,000
Monroe & Orleans (Rte. 31)	FARC 58-119	Holley Brockport, Pts. 1 & 2 S.H. 5421-5425 Project F 1037(3)	1.14 (0.29 Acc.)	9" Cem. Conc. Pavt. 24' Wide = 1.07 Mi. Asph. Con. (Acc.) = 0.29 Mi. Misc. Work = 0.07 Mi. Comp. Girder Br. 321'	$40,000 Full Size Plans $15	716,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie (Rte. 20)	FARC 58-105	South Western Blvd., S.H. 9269 Project DF 1079(7)	3.11	Asphalt Concrete	$35,000 Plans $2	611,000
Erie	PSC 15215 FINTC 58-4	Inter. Route No. 506, New York State Thru. Niagara Sect. (Michigan Ave. Viaduct-City of Buffalo) Michigan Ave. Viaduct—Over N. Y. Central R. R. Project I 865(18)	0.20 (0.06 Acc.)	Asph. Conc. Ty. 2A = 0.15 Mi. Br. Pavt. = 0.11 Mi. RR Sep. W.F. Comp. Beam 604.6'	$60,000 Full Size Plans $15	1,104,000
Erie (Rte.5)	FAC 58-14 FAC 58-15	City of Lackawanna: Arterial Rt. Fuhrmann Blvd.-Hamburg Turnpike Viaduct (North City Line & Ridge Road) City of Buffalo: Arterial Rt. Fuhrmann Blvd.-Hamburg Turnpike Viaduct (Tiff St.-South City Line) Project U 750(14)	1.77 (1.45 Acc.)	Asph. Conc. Ty. 2A (Appr.) = 0.67 Mi. Cem. Conc. Pavt. (Viaduct) = 1.08 Mi. Misc. Work = 0.02 Mi. Asph. Conc. (Acc.) = 1.45 Mi. Viaduct Decking	$190,000 Plans $10	3,266,000
DISTRICT No. 6, James H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Yates (Rte. 14)	FARC 58-115	Starkey-Dresden, Pt. 2, S.H. 8353 Project DF 505(8)		Transplanting Trees	$2,200 Plans $5	40,000
DISTRICT No. 7, Robert W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Rte. 12F)	FARC 58-110	Cape Vincent-Watertown, Part 3, S.H. 1182 Project DF 565(5)	3.40	Asph. Conc. = 3.34 Mi. Misc. Work = 0.06 Mi.	$30,000 Plans $3	555,000
DISTRICT No. 8, Kurt G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Orange (Rte. 17K)	FARC 58-116	Bloomingburgh-Bullville, S.H. 8166 Mont-Bullville, Part 2 & 1, S.H. 1648-576 Project DF 483(4)	10.00	Asph. Conc. 2RC Twin Box Brs. 23.1' & 21'	$78,000 Plans $5	1,414,000
ULSTER (Rte. 9W)	FARC 58-107	East Chester Street Extension S.H. 9360 Project DF 857(3)	1.44	Asphalt Concrete	$12,000 Plans $2	216,000
DISTRICT No. 9, Joseph C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rtes 17 & 7)	RC 58-106	Binghamton City: Vestal Ave. By Pass FAC 49-8; Binghamton City: Court St.-Rte. 17 Conn. (Susquehanna River Br.) FAC 54-17; City of Binghamton: Brandywine Ave. Ext. (Art. Rte.) FAC 52-3: Brandywine Ave. Ext. FASH 52-8 and Brandywine Ave. Ext., Pt. 2 (North Chenango St. Inter sect.) FASH 55-4	....	Landscaping and Misc. Work	$5,000 Full Size Plans $10	86,000
DISTRICT No. 10, M. E. Gould, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx	FIMDE 58-1	Inter. Route Conn. No. 512 Major Deegan Expressway (Cont. 1) (Park Ave. to St. Ann's Ave.) Project I 1082(25)	1.05 (27,200 S.Y. Acc.)	9" Cem. Conc. Pavt. (Carb. Black) 2 @ 39' Wide = 0.81 Mi. Misc. Work = 0.24 Mi. 23,000 S.Y. Sheet Asph. Pavt. & 4,200 S.Y. Cem. Conc. Pavt. (Acc.) Hy. Sep. Comp. I Beam 112' Widen 3 Exist. Hy. Seps. 455.2' Pl Gird., 106.5' St. Rig. Frame and 79.6' R.C. Rig. Frame New Ramp and Alter. Exist. Ped. Overpass	$300,000 Plans $20	5,360,000
Bronx	FIBE 58-4	Inter. Route Conn. No. 516 Bruckner Expressway (Sect. L Cont. 1) (St. Ann's Ave. to East 141st St.) Project I U 1086(7)	0.63	9" Cem. Conc. Pavt. 2 @ 37.5' Var. Wide (Including Exp. Struct. Surf. Paving Lighting, Drainage & Misc. Work)	$650,000 Plans $20	12,417,000
Nassau (Rte. 27)	FARC 58-118-SS 58-9	Conduit Blvd. Pt. 3, S.H. 1699A, Merrick Rd. Project U 947(15)	0.94	Directional Signs & Lampposts	$5,100 Plans $2	92,000
Richmond	FICLE 58-1	Inter. Route Conn. No. 512, Clove Lakes Expressway (Cont. 1) (McKinley St. to Fingerboard Rd.) Project I 1066(25)	6.62	Demolition of Bldgs.	$19,000 Plans $3	346,000
Suffolk (Rte. 27)	FASH 58-6	Sunrise Highway Ext. (Yaphank Ave. to Uptown Blvd.) Cont. 2 Project DF DU 947(14)	2.56 (5.00 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Wide = 2.34 Mi. Asph. Conc. = 0.12 Mi. Misc. Work = 0.10 Mi. Acc. Cme. Conc. Pavt. 1.90 Mi. & Asph. Conc. 3.10 Mi. Hy. Sep. Comp. Girder 233.8'	$168,000 Plans $10	3,043,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City. The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: August 19, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For the Furnishing and Delivery of High Pressure Oil Pipe Type Cable for
Niagara Power Project
Specifications No. PA-N-25021
Niagara Contract No. NP13

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Niagara Switchyard Area, University Siding, Niagara Falls, New York, of high pressure oil pipe type cable circuits for the Niagara Power Project in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 19th day of August, 1958, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for eighteen (18) circuits of high pressure oil pipe type cable in accordance with the bidding schedule.

Delivery of the high pressure oil type cable circuits will be required beginning on or before September 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Twenty-five Dollars ($25.00) per initial set of contract documents, and Ten Dollars ($10.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than twenty (20) percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: August 21, 1958.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For the Furnishing and Delivery of Draft Tube Pier Noses for Lewiston Power Plant and Tuscarora Power Plant
Specifications No. PA-N-24005
Niagara Contract No. NP10

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. destination, of 13 sets of draft tube pier noses for the Lewiston Power Plant and 12 draft tube pier noses for the Tuscarora Power Plant in Lewiston, Niagara County, New York, until 10:30 A.M., Eastern Daylight Saving Time on the 21st day of August, 1958 at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be entertained for welded structural steel draft tube pier noses with base pads, anchor bolts, and accessories. The work involves the fabrication of approximately 338 tons of metalwork. First delivery will be required beginning March 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of ten dollars ($10.00) per initial set of contract documents, and five dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the maximum price bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: August 14, 1958

Soil Explorations and Foundation Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time on August 14, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON RACQUETTE RIVER—HOGANSBURG, PT. 2, INDIAN RESERVATION—FORT COVINGTON, PT. 1, FRANKLIN COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM-129.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. Robert W. Sweet, District Engineer, New York State Department of Public Works, 444 Van Duzee Street, Watertown, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $9650.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5084) will be received at Camp White, Oregon until 10 a.m. Pacific Standard Time, August 28, 1958, for furnishing labor and materials for earthwork, concrete lining, and structures, Ashland Lateral Diversion Dam and Ashland Lateral Extension, Rogue River Basin Project, Oregon. Location about 8 miles southeast of Ashland, Oregon in Jackson County. Principal items are 75,000 cu. yds., excavation; 1,600 cu. yds., concrete; 10,800 cu. yds., compacting embankments; and other work. The work is divided into 2 schedules. Completion time 225 days. For particulars, address Bureau of Reclamation, P. O. Box 386, Camp White, Oregon; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5085) will be received at Ogden, Utah until 10 a.m. Mountain Standard Time August 28, 1958, for furnishing labor and materials for earthwork, concrete canal lining and structure—Gateway Canal Revision, Station 387+65 to Station 401+65 BK, Weber Basin Project, Utah. Location near Peterson, Utah in Morgan County. Principal items are 80,000 cu. yds. excavation; 700 cu. yds. concrete in reinforced concrete canal lining; and other work. Completion time 90 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: October 30, 1958

Kingdom of Thailand Royal Irrigation Department Bangkok, Thailand

The Royal Irrigation Department of the Kingdom of Thailand requests sealed written bids for furnishing and delivering cif Bangkok Wharf for the Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents, including Invitation for Bids—No. YS-2-3, the following equipment:

Two 98,350 metric hp. Francis-type, vertical-shaft, 150 rpm, hydraulic turbines, rated at a net effective head of 100 meters, complete with governors and pertinent equipment.

Bids will be opened at 10:00 a. m., 30 October, 1958. Copies of Contract Documents, including Invitation for Bids—No. YS-2-3, may be obtained by qualified Bidders on written request on Bidder's letterhead, addressed to Royal Irrigation Department, Attention: Thai Liaison Engineer, c/o Engineering Consultants, Inc., 1940 West Mississippi Avenue, Denver 23, Colorado, U.S.A. Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U. S. $5.00 for each copy of the Contract Documents requested.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department

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NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

Hydraulic Engineers—Civil Engineer Graduates—All grades, experienced in hydraulic design of channels and bridges and/or design and construction of dams, for regulatory agency. Duties include review of plans and specifications, report writing, field investigations and inspections, with some travel and public relations. Salary depending on experience. Location—Harrisburg, Pennsylvania. P-8403, Engineering News-Record.

County Engineer Wanted: Require registered engineer with highway experience. For more information contact Guthrie County Board of Supervisors, Guthrie Center, Iowa.

Estimator — General Building Construction Northern Ohio area. Must be experienced with good reference. P-8444, Engineering News-Record.

Wanted—Civil Engineer with soil mechanics and construction background. Position involves extensive travel. Reply giving full details of background and experience. P-8459, Engineering News-Record.

Construction Superintendent to take complete charge of underground pipe work for water and sewer installations for company situated in South Florida. Must be thoroughly experienced and capable of acting in an executive and administrative capacity responsible only to the president of company. Permanent position. State complete qualifications and salary desired in first letter. P-8541, Engineering News-Record.

General Superintendent—General Contractor with substantial volume throughout Michigan has opening for experienced young man to take charge of all field operations. State experience and references. P-8555, Engineering News-Record.

Structural Steel Salesman wanted to represent large bridge fabricator in Northeastern States. Must be energetic and have a thorough knowledge of steel fabricating business. Apply: Pine Brook Iron Works, Inc., Mill Street, Dunmore, Penna.

Assistant Civil Engineer—Employment opportunity in Engineering Office of a growing Santa Clara County City. Salary Range $530-8644. Graduation from a curriculum in Civil Engineering accredited by the Engineers' Council for Professional Development; one year full-time work in some phase of civil engineering, preferably hydraulics. Paid vacation, sick leave, holidays, retirement system and other benefits. Apply Personnel Office, City Hall, Mountain View, California.

Associate and Assistant Professors for fields of advanced dynamics, advanced strength, and elasticity. Also have opening for graduate student as half-time instructor. Engineering Mechanics Dept., Kansas University, Lawrence, Kansas.

Wanted: Young graduate Engineer, preferably single, interested in overseas assignment with Consulting firm. State education, background and experience. Reply fully to P-8394, Engineering News-Record.

Specification Writer. Experienced. For permanent position with established consulting sanitary engineering firm in New York City. P-8586, Engineering News-Record.

HIGHWAY and BRIDGE CONSTRUCTION ENGINEERS

for work in SOUTHEAST ASIA

Senior personnel needed to complete technical party. Work involves supervision of construction of highways and bridges in South Vietnam. Duties include instruction of on-the-job trainees. High degree of initiative, judgment and skill in handling human relations required in addition to professional competence. Eighteen-month minimum employment agreement. Only those interested in difficult and challenging work should apply.

Minimum 20 years experience on construction supervision of highways and/or bridges required in these highly responsible positions. Age limit 65 years. Those willing to travel in single status will be given preference.

For Application Blank Write to

CAPITOL ENGINEERING CORPORATION
Consulting Engineers DILLSBURG, PENNSYLVANIA

The Commonwealth of Pennsylvania Seeks

BRIDGE DESIGNERS

with C.E. degree and 1 to 5 years of bridge experience.

Expanding operations offer permanent positions for

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Salaries from $5500 to $8200 per year.

Plus Liberal Fringe Benefits

Send Complete resume to

PERSONNEL, PA. HWYS. DEPT., HARRISBURG, PA.

ENGINEERING DESIGN PERSONNEL

For Work On Highway, Bridge, Water and Sewerage Projects

Openings in Pennsylvania, Ohio & West Virginia

Career opportunities for individuals interested in professional recognition, ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

Mail Resume To F. W. AHERN, Personnel Director

MICHAEL BAKER, JR., INC.
Consulting Engineers
Baker Building Phone SPruce 4-3010 Rochester, Penna.

BASCULE BRIDGE DESIGNER

Our Miami, Florida Office in Du Pont Plaza Center Bldg. has an opening for a Chief Structural Engineer with a minimum of 10 years design background of Bascule and related bridge structures. Write fully to: Mr. Whipple Jones, V. P.

EWIN ENGINEERING CORPORATION
1367 Connecticut Ave., N.W.
Washington 6, D. C.

YOUNG CIVIL ENGINEER

Experience in foundation construction and design desirable. Permanent position with manufacturer of tubular steel piles. At start, job involves work with pile driving contractors. Future possible development in engineering promotion and sales. Salary open. Mail detailed experience record and references to W. H. Robertson, c/o The Union Metal Manufacturing Company, Canton, Ohio.

EXCELLENT OPPORTUNITY for Superintendent

Large, well established, structural steel fabricating plant in Pittsburgh area offers exceptional opportunity to capable man with successful background in operating steel fabricating shop.

This is a permanent job offering advancement opportunity, excellent salary and fringe benefits.

All replies held confidential.

Write full details of education and employment background to

Box P-8530, Engineering News-Record, 520 N. Michigan Ave., Chicago 11, Ill.

GRADUATE CIVIL or ARCHITECTURAL ENGINEERS

We are looking for a young, recent college graduate, with a degree in either architectural or civil engineering, for a position in our El Paso, Texas—Estimating Department. This position provides a training ground for our future superintendents and executives. It is an excellent opportunity for a young man to obtain a desirable position with a reliable firm doing all types of construction work.

ROBERT E. McKEE
GENERAL CONTRACTOR, INC.
PO BOX 562 EL PASO, TEXAS

CONSTRUCTION COST ESTIMATOR

The Commonwealth of Pennsylvania offers a permanent position to a construction cost estimator with a Civil Engineering degree and at least one year of experience in highway construction cost estimating. Salary from $6,000 to $7,000, plus liberal fringe benefits. Send complete resume to

PERSONNEL
PA. HWYS. DEPT. HARRISBURG, PA.

DRAFTSMEN

For detailing of Reinforcing Steel, Steel Joists, Windows, etc. Experienced men only in this or Allied Fields considered. Permanent positions. Air-Conditioned Office, 40-hour week, overtime, hospitalization, group insurance and retirement plans, paid vacation. Location: Birmingham, Alabama. Reply giving brief resume of experience, education, availability and salary requirements.

P-8529, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CORROSION ENGINEERS

Several attractive openings are available with a highly regarded, major Eastern engineering company. These positions require Electrical Engineering graduates, with 5-10 years experience in corrosion control investigation, corrosion testing and solution of corrosion problems on pipelines, underground cables, power plant structures, piers, wharves, water and oil storage tanks, etc.

These positions offer ample opportunity for professional growth and personal achievement. Considerable travel within the USA with possibilities of some overseas work. We invite you to investigate these opportunities by forwarding a complete confidential resume.

P-8440, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

ESTIMATOR

Structural Steel & Orn'tal Iron Work. Plan reading & Price Listing—(Essential)—An excellent opportunity for the Right Man, with many benefits—Location S/E Ohio.

P-8497, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

Experienced Aggressive Estimator for Building Construction General Contractor in Houston, Texas. Competitive Lump Sum Bidding Experience Required.

Reply **P-8482,** Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
DESIGN ENGINEERS

Expressways, Modern Highways. Min. 5 years experience. Permanent, hosp., vacation, bonus, etc.

MACCABEE, CAMPBELL & ASSOCS.
173 W. Madison St. Chicago 2, Ill.

• POSITIONS VACANT

Civil Engineers—Company fabricating Reinforcing Steel, Steel Joists and Allied Products operating in Southeast has openings in Engineering Department for two graduates. Applicants be subject to intensive training for positions of responsibility. Must be hard working, ambitious, aggressive and have qualities of leadership, military obligation to be completed. Reply furnishing brief and complete resume of experience, recent photograph, availability and salary requirements. P-8577, Engineering News-Record.

Sewage Treatment Engineers and Chemists— City of Nashville, Tennessee has openings for Sewage Disposal and Treatment Engineer, $7500 to $8200 year; Assistant Sewage Disposal and Treatment Engineer, $6000 to $6600 year; and Chief Sewage Chemist, $5100 to $6000 year. Graduate Engineers aged 28 to 45 years, 4 to 6 years experience. All positions under Civil Service with accompanying benefits. If called for interview, City will pay travel and reasonable incidental expenses. Write giving education, experience, references and personal data to Nashville Civil Service Commission, 305 City Hall, Nashville 3, Tennessee.

New England Contractor looking for young graduate Engineer with experience in heavy construction. Excellent opportunity. Send full resume. P-8592, Engineering News-Record.

Wanted—experienced man for working plant superintendent. Manufacturing specification concrete pipe in modern plant located large, rapid growing southwestern city, write giving complete qualifications, salary expected and recent photograph. Reply held strictly confidential. P-8614, Engineering News-Record.

Wanted Architectural Draftsman with 2 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8590, Engineering News-Record.

Wanted Registered Architect with 4 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8615, Engineering News-Record.

• EMPLOYMENT SERVICES

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 47 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars, R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

Salaried Personnel $5,000-$30,000. This nationwide service successful since 1927 finds openings in your field. Sells your abilities; arranges contacts. Present position protected. Write for details—Jira Thayer Jennings, P. O. Box 674, Manchester, Vermont.

• POSITIONS WANTED

Registered highway engineer, land surveyor. 30 years experience. Engineer or construction superintendent, highways, bridges, sewers. PW-8429, Engineering News-Record.

Construction Executive 30 years experience in all phases of heavy and industrial construction, power plants, chemical plants, sewage plants, filtration plants, refinery installations, locks, dams, and tunnels. Interested in connection with aggressive contracting company doing competitive bidding and promotional sales work. Estimating and pricing accurate and construction methods current. Desirous of participating arrangement. PW-8423, Engineering News-Record.

Structural Engineer: BCE. PE: 26, single. Experience: 2 years Asst. IEO, USAF, 1 year instructor in accredited college, 2 years structural design, principally bridges. PW-8430, Engineering News-Record.

Supt. Const. 20 yrs. Institutional, Industrial, Commercial. Engineer. Anywhere. PW-8457, Engineering News-Record.

Construction Man; 12 yrs. Supervisory experience General Construction, age 33. PW-8448, Engineering News-Record.

Executive Assistant. Experienced Management Level construction administration including engineering, contracts, purchasing and personnel. Engineering degree. Age 36. PW-8504, Engineering News-Record.

Project manager, negotiator, general superintendent, public relations. U. S. and foreign experience in general construction, mass housing, roads and utilities, material production. Available September 1. PW-8507, Engineering News-Record.

Professional Engineer and Land Surveyor, age 48, available immediately. Satisfactory domestic and foreign experience in construction, design, materials, maintenance, equipment, research and management of highways, structures, military and municipal facilities since graduation. Starting salary requirement is secondary to challenge; minimum of $600 per month. For detailed resume write W. L. Frederick, 3702 Hammersley Ave., Madison 5, Wisconsin, or phone Cedar 3-7769.

Construction Superintendent or Foreman. 18 years experience highway construction supervising heavy earth moving equipment—excavating, grading, and drainage. Prefer Midwest or Far West. E. A. White, P. O. Box 358, Mt. Holly Springs, Pennsylvania.

Construction Superintendent—general construction, age 46, 12 yrs. last employer, hold Carpenter's book. PW-8465, Engineering News-Record.

Bilingual, French-English P.E., some Malay, German. Structural-Civil, U.S.C. 41. Military & Civil work. 13 yr. design, 4 yr. field. Wide experience, sewers to cable-ways, buildings & prestress. U. S. Citizen. P.O. Box 607, Colorado Springs.

Construction Engineer: 42: Twenty years experience, domestic and foreign: Power plants, airports, highways, oil handling facilities, design and construction: currently completing several design projects for Department of Interior in Caribbean area. Interested in connection with consultant or contracting organization handling Latin American projects. Licensed C.E. several U. S. states and Puerto Rico. PW-8534, Engineering News-Record.

Project Manager or Superintendent for architect or contractor available. Recently completed luxury type 325 room El San Juan Hotel. Working knowledge Spanish and French. Also experienced heavy construction and housing. Age 44, single. Airmail replies to: Allen McSherry, P. O. Box 1215, San Juan, Puerto Rico.

• POSITIONS WANTED

Construction Executive, thoroughly familiar with all phases of the construction industry. PW-8535, Engineering News-Record.

Experienced Estimator, Project Mgr. and Construction Engineer. Registered Graduate Civil Engineer. Age 35. Available Now! PW-8225, Engineering News-Record.

BSCE-33-PE-Presently project engineer on municipal paving and sewage for consultant. Desire Midwest location with city or consultant. PW-8546, Engineering News-Record.

Engineer—Over 15 yrs. exp. steel, concrete, and foundation design for oil refineries, railroads, bridges and buildings. Part or full time N. Y.-N. J. area. PW-8559, Engineering News-Record.

Construction manager or superintendent— twenty years experience power plants, pulp, steel and fuel plant construction. Foreign or domestic. Available immedjately. PW-8558, Engineering News-Record.

Accountant Office Manager experienced heavy construction NCR and IBM cost system and procedures. Go anywhere. PW-8556, Engineering News-Record.

Canadian citizen migrating to U. S. wishes to associate with general contractor in general construction. Has 10 years civil engineering experience and $15,000 capital to offer. Reply PW-8552, Engineering News-Record.

Construction Engineer, PE, BSCE, 34, 1 yr. structural design 8 yrs field engineering & contract management in industrial construction. PW-8588, Engineering News-Record.

Civil Structural Engineer—B.Sc. P.E., 33. Diversified experience—design & construction, particularly reinforced and prestressed concrete. Prefer New York City, Westchester and vicinity. PW-8562, Engineering News-Record.

Attorney—Project Engineer experienced in design of refineries & heavy industrial plants & in all phases Top multi-corporate management seeks Top Executive who needs intelligent assistance. N.Y.C. loc. PW-8571, Engineering News-Record.

Civil-Sanitary Engineer; M. ASCE., M. APHA., P.E., Advanced degrees. Experience in civil, sanitary, public health engineering, construction and engineering teaching. PW-8576, Engineering News-Record.

Civil Engineer, 34, German Prof. Engr. Degr. Exp. field supervision & management, highway bridge, dam constr., Project Engr., Asst., Res. Engr., Asst. Supt. Field Exp.: 4 years Germany, 3 years U. S. Located Middle West. Foreign or domestic assignments. PW-8579, Engineering News-Record.

Available Sept 1st—Foreign or Domestic. Tunnel Supt., 45—24 yrs Practical experience. Unlimited knowledge, all phases—tunnels, shaft's, caissons, penstocks, underground powerhouses, roofbolting, concrete, grouting, gunniteing, modern methods can get top production. 14 yrs one contractor, help estimate. Am not seeking chair job. Have good following—proof of ability, references and resume on request. PW-8578, Engineering News-Record.

Sanitary Engineer, 55, Design and Field experience—Plumbing, Heating, Water Supply, Drainage, Pumping & Filtering Systems. PW-8595, Engineering News-Record.

Graduate Civil Engineer, 15 years extensive engineering, construction & executive experience wants opportunity with general contractor. Will invest if necessary. PW-8613, Engineering News-Record.

Can you use a dynamic plant manager with a positive, energetic, resourceful personality, experienced in the design and supervision of varied steel and concrete structures. PW-8589, Engineering News-Record.

Versatile, imaginative and cost conscious Project Manager desires position requiring a combination of technical prowess and design supervision for heavy marine or on shore construction. PW-8596, Engineering News-Record.

• SELLING OPPORTUNITY WANTED

Man with 30 years experience as estimator and superintendent and once owned and operated own contracting business doing commercial buildings, schools and water filtration plants wants to represent out-of-state contractor doing business or desiring to do business in Alabama and adjoining states. Have also had considerable experience in government construction. RA-8551, Engineering News-Record.

SEARCHLIGHT SECTION

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$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

FOR RENT OR SALE ON RENTAL PURCHASE

Three (3) 54-Ton

LIMA 703-SC CRAWLER CRANES

All independent features, torque converter, GMC diesel engine, 120 ft. boom plus jib. New factory price 83,000.00

OUR PRICE **$48,000.**

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Tel. GLadstone 7-0700

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4—Dart Trucks, Mod. 10-S-UG
1—G.D. Compressor, 900 C.F., Mod. 62303
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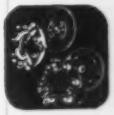

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Heads Up, No Apologies

WHO SAYS engineers are lacking in cultural knowledge, and who says that engineering professors are grossly underpaid? Too many people, including engineers and professors, have such opinions on these often discussed topics, and they are far off base, said two engineering professors at the recent meeting of the American Society of Civil Engineers in Portland, Ore. The proof they offered should be balm to any wounded sensibilities that exist on these scores. Heads up and no apologies was the professors' conclusion.

E. F. Rice, professor of civil engineering at the University of Alaska, drew his proof of a quite satisfactory level of cultural knowledge on the part of engineers from different sets of intelligence tests given engineering students over the years in which questions on the arts, literature, language etc. were dominant. Actually, said Professor Rice, the results are so flattering to engineers—and to the type of education they receive in engineering schools—as "to justify withholding them from the profession for fear of mass vain-glory."

But Professor Rice did reveal the results, and placed particular emphasis on a study made as long ago as 1938 by the Carnegie Foundation for the Advancement of Teaching to determine the degree of "general culture" possessed by college students. Engineering students, both at the end of their sophomore and senior years, scored higher than students majoring in business administration, education and even liberal arts. These were students with broadly varying I. Q.'s, but when students of equal I. Q.'s were later tested, the results were practically the same. Only the very highest I. Q. liberal arts students bested the engineers, and the differences in scores were almost inconsequential.

It was not Professor Rice's purpose merely to bolster the ego of engineers—though this was a part of his plan. He wanted to point out that engineering curricula in our colleges are not so much in need of so-called cultural courses as some educators would have us believe. The rigorous training given engineers apparently pays very broad dividends. In fact, judging from the poorer showing of many of the non-engineering students in the tests, it may be their curricula rather than that of engineering that need overhauling.

And what of the pay received by the professors who teach these engineering students? J. E. McKee, professor of sanitary engineering, California Institute of Technology, said it was not only pretty good, but that a lot of professors "by an attitude of self pity and public lamentation have convinced everybody that college teachers are downtrodden, underprivileged and underpaid." This, he warned, was the best possible way "to scare away the potential young graduate who had hoped to go into teaching."

Professor McKee did not maintain that engineering faculty salaries should not be increased, but that their present level did not justify "public wailing." A national survey on the income and salaries of registered engineers in 1956 showed that the salaries of engineering professors were near the national median for all engineers. They were below those in administrative, sales and research and development, but ahead of those in design, production and supervision of construction, he pointed out. However, engineering professors can—and more of them should—augment their salaries, said Professor McKee, by outside employment as consultants to government, industry and private engineering firms.

Professors Rice and McKee were basically interested in ways to improve engineering education—the former by opposing any tendency to load engineering curricula with so-called cultural courses, the latter by warning professors not to sell their calling short. But in setting forth these pedagogic theses, an even more powerful point was made: engineers, including engineering teachers, have a right to be proud of their profession and of their own abilities, technical or otherwise. By all means seek improvement, but don't make apologies. They are not necessary.

Record Speed at the Academy

WHEN THE FIRST CADETS move into the Air Force Academy in about three weeks, an important goal in the history of this controversial project will have been reached and a peacetime speed record for building construction may have been set. In the four years since the project was started, construction costing $94.5 million has been completed. Construction, once begun, progressed at an average rate of nearly $5.7 million per month.

In paying tribute to the personnel who participated in the construction program, Col. A. E. Stoltz, director of the Air Force Academy Construction Agency, last week pointed out that this schedule was accomplished without extra payments for speed.

And it was a tough schedule: On the rolling, mountainous site north of Colorado Springs, 53 major buildings have been finished, and 14 more will be completed in about a month to provide 4 million square feet of floor area. Nearly 90 prime construction contracts have been awarded, and 450 subcontractors were called in to help. At one time, the work force exceeded 5,000.

Furthermore, the buildings are by no means ordinary—their design has been controversial from the start—and each differs from the next. Both steel and concrete framing were used, and the exteriors are mostly aluminum and glass.

Though the academy will not be completed on opening day, the long-standing objective of having sufficient facilities finished in time for the fall term appears to be assured. The designers, the builders and the AFA Construction Agency are to be congratulated.

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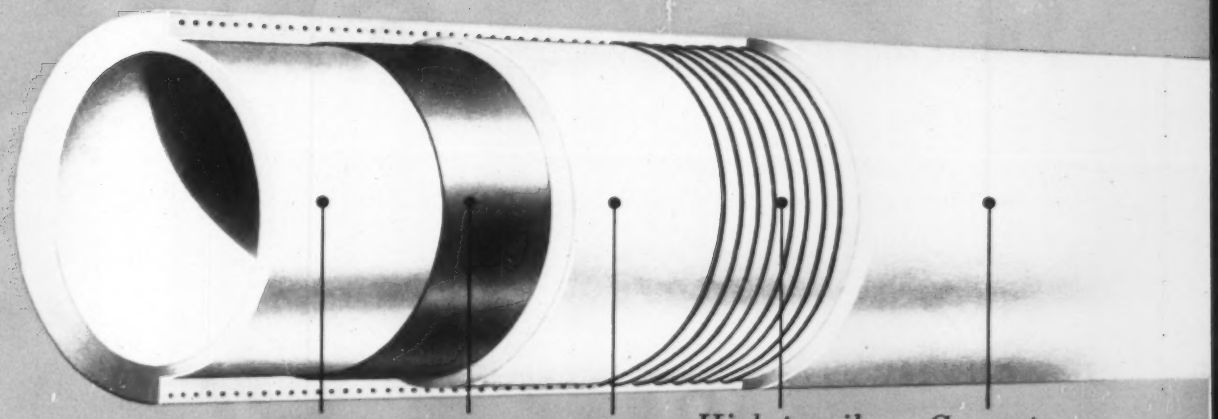

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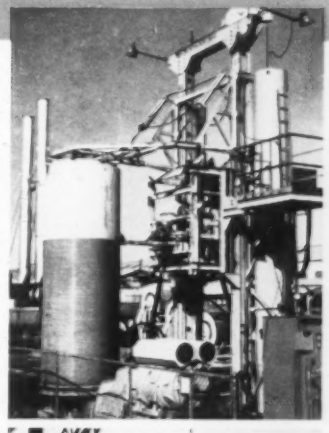

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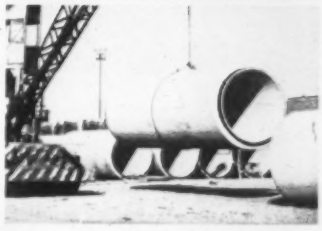

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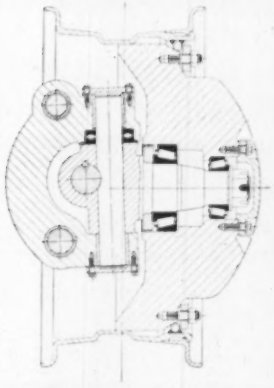

How **GALION** mounts the front end assembly of the T-700 on Timken bearings.

World's largest motor grader weighs more than 20 tons—24 TIMKEN® bearings take the load

THE world's largest motor grader (above) sets up enormous loads as it slams a road into shape. And when it rolls on a steep grade, the thrust loads are even greater. To make sure their T-700 Grade-O-Matic could take *all* the loads, the Galion Iron Works & Manufacturing Company specified 24 Timken® tapered roller bearings—for the reverse gear case, transfer case, front wheels and king pins, and the rear wheel tandem drive.

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